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A Tuberculosis Control Program

For Institutions in the New York State Department of Mental Hygiene

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THE New York State Departments of Health and Mental Hygiene have been aware for several years of the seriousness of the tuberculosis problem inherent among approximately 86,000 inmates and 19,000 employees in the 26 institutions for mental diseases and schools for mental defectives under the control of the Department of Mental Hygiene. Although diagnostic and treatment facilities are available in some of these institutions, the cost of providing adequate x-ray service to all has been the principal deterrent in the establishment of uniform, acceptable tuberculosis control programs in all the institutions. With the development and improvement of equipment providing smaller and less costly x-ray films, plans were advanced jointly by the two departments to meet the problem.

The seriousness and significance of tuberculosis among inmates is strikingly revealed by a review of available data relating to mortality, morbidity, communicability, and cost of this disease in such institutions.

MORTALITY

The average death rate from tuberculosis in institutions for mental diseases and mental defects is approximately twelve times that for the population as a whole. The death rate ranges from approximately 100 per 100,000 in one institution to 1,497 per 100,000 in another. The average death rate during the three years 1937–1939 was 614 per 100,000 as compared with 51 per 100,000 for New York State.

MORBIDITY

Studies made by the Department of Health and others indicate that between 3 and 5 per cent of inmates of such institutions have active tuberculosis. A recent x-ray study of 1,000 patients in Binghamton State Hospital revealed

that 4.7 per cent of the patients x-rayed had previously unrecognized, clinically significant tuberculosis. Another study recently made by the staff of one of the state tuberculosis hospitals (Hermann M. Biggs Memorial Hospital) at Willard State Hospital, revealed that, among 3,176 patients, 9.1 per cent showed x-ray evidence of reinfection tuberculosis, of whom more than one-third had active disease. Moreover, reëxamination of 2,414 of these patients 12 to 18 months after the first x-ray revealed 15 new cases which had developed during this interval.

COMMUNICABILITY

The Willard State Hospital study also revealed that, of 794 employees x-rayed, 27, or 3.4 per cent, showed evidence of reinfection type tuberculosis, of whom 11 were clinically significant. All these cases of tuberculosis were found among the 425 employees who were engaged in direct and intimate service to patients on the wards. One year after the original survey, 4 new cases of tuberculosis had developed in this group of employees.

There are 4 state tuberculosis hospitals in upstate New York, each of which maintains an active case and contact register for the counties served by the hospital. In Seneca County with a population of 22,744 (the county in which Willard State Hospital is located), of a total of 81 cases of tuberculosis on the register when the survey was undertaken, 19, 23 per cent, were or had been employed at Willard State Hospital. The discovery of 7 of these cases among employees at Willard within 18 months prompted the survey of the institution.

COST

During the past 5 years, the New York State Insurance Fund has expended more than $900,000 for medical and nursing care and compensation for 120 cases of tuberculosis which were declared compensable and which had developed among 17,000 employees of the Department of Mental Hygiene. This represents an average of almost $8,000 per case, and confirms the results of previous studies on the cost of tuberculosis made by the Division of Tuberculosis of the State Department of Health.

Recent developments in photographing the image on the fluoroscopic screen by the use of either 35 mm. or 4 x 5 in. films have opened new channels of opportunity for more extensive use of x-ray in case finding on a practical, economical, and fairly accurate basis. A study to determine (a) technical factors in making exposures and processing small size films, and (b) relative ease and dependability of interpretation as compared with 14 x 17 in. films, was made at Binghamton State Hospital. Each of 1,000 inmates was x-rayed three times—first, using 14 x 17 in. x-ray film, second, 4 x 5 in. film, and, lastly, 35 mm. film. Details of this study are presented in a companion article, "Comparative Value of Roentgen-Photographic Methods."

As a result of this study, and with further experience in x-raying selectees at the induction stations in upstate New York, it is our considered opinion that the 4 x 5 in. films are a satisfactory medium for screening large groups of people. Their degree of accuracy is within acceptable limits and, considering all factors, they are as economical as any other method.

Having solved the problem of excessive cost of 14 x 17 in. x-ray films by using the fluorophotographic method with 4 x 5 in. films, at approximately one-tenth the cost for films of the former size, the next step was to include this method in our plans for a long-range program for tuberculosis control in these institutions. The plan includes two main subdivisions: (1) to deter-

mine the extent of the problem, and (2) to take the necessary steps for control.

In effecting this plan, the following steps are to be taken:

DETERMINATION OF THE EXTENT OF THE PROBLEM

a. X-ray examination of all inmates by wards and buildings—Where tuberculosis wards exist, the patients in such wards are to be examined first, inasmuch as experience in three institutions has revealed that as high as 50 per cent of inmates isolated in these wards may not have clinically significant tuberculosis.

b. X-ray examination of all employees.

ADOPTION OF MEASURES NECESSARY FOR CONTROL

a. Segregation of all inmates with tuberculosis in tuberculosis wards—Where no tuberculosis wards exist, necessary provisions will have to be made to segregate cases found to have active lesions. Facilities for segregation are now available in all but six of the institutions.

b. Thorough study of employees with x-ray evidence of tuberculosis to determine their clinical status—To this end, admission to state or county tuberculosis hospitals may be necessary.

c. Examination of all new admissions by means of x-ray alone or by means of tuberculin test, followed by X-ray of positive reactors.

d. Preëmployment x-ray examination of all new employees.

e. X-ray examination every 6 months of employees giving direct service to inmates, and every 3 months of employees in tuberculosis wards.

f. Active consultation service between the medical staffs of the Division of Tuberculosis and the hospitals regarding all phases of the control and treatment program.

g. X-ray reëxamination study of the inmate population at the end of 1 year to determine future needs.

h. Establishment of a system of records which will provide necessary clinical, epidemiological, and statistical data.

i. Establishment of necessary prophylactic procedures, and the institution of an educational program on prophylaxis and prevention of tuberculosis for all nurses, attendants, ward workers, and others closely associated with the inmates, particularly those in the tuberculosis wards.

The New York State Legislature has appropriated $45,000 with which to start this program July 1, 1941. A budget has been prepared which will provide 3 physicians, 1 of whom will direct the project, 2 x-ray technicians, 2 complete x-ray units capable of producing 4 x 5 in. films, a sufficient amount of such films and chemicals to x-ray between 45,000 and 50,000 individuals the first year, and a sufficient number of 14 x 17 in. films, with chemicals, to provide further detailed study of those individuals who show lesions on the small films. In addition, the budget also provides for traveling expenses, installation of alternating current where none exists, and other unforeseen contingencies.

It is obvious that the first year or two of the program will be taken up with determining precisely what the problem is, and that satisfactory control will not function until this question is answered. Nevertheless, control measures will be introduced as cases are found, and will go hand in hand with case finding.

Comparative Value of Roentgen-Photographic Methods

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MOST public health officials and physicians engaged in tuberculosis work are aware of the need for more intensive tuberculosis case finding through the use of the x-ray. Except in a few communities, workers in this field have not been able to do more than scratch the surface of this important problem.

Probably no single factor has retarded progress in extending tuberculosis case finding facilities to larger groups of the population more than has the cost of x-ray films.

Recent developments in photography of the fluorescent screen by the use of either the 35 mm. film or the 4 x 5 in. film have opened new channels of opportunity for more extensive and progressive case finding on an accurate, practical, and economical basis.

Although it is obvious from available reports [1–9] that either of these methods would effect a real economy, there are no conclusive data available that would indicate which is the more satisfactory in x-raying large groups of persons. It was decided, therefore, to conduct a study to determine: (a) technical factors in making exposures and processing small size films, (b) the relative ease and dependability of interpretation of small films, as compared with standard 14 x 17 in. films.

Inasmuch as the members of our staff had never used either of these small film methods, the Westinghouse and the General Electric Corporations were invited to participate in a study of 1,000 persons. Each company was requested to furnish the x-ray equipment, films, and personnel, and to assume full responsibility for producing a processed film for interpretation. It was agreed that Westinghouse would use 35 mm. films and General Electric 4 x 5 in. films. Our own staff would assume responsibility for the 14 x 17 in. films.

With the advice and assistance of Dr. William J. Tiffany, Commissioner of the Department of Mental Hygiene, and Dr. William C. Garvin, Superintendent of Binghamton State Hospital, this institution was selected for the study because we could expect to find there a higher percentage of tuberculosis than in the average population. Realizing that the patients in such a hospital are not as coöperative as normal people, we assumed that any method which could be adapted to the x-ray examination of such patients would be found to be even more satisfactory for the x-raying of normal people.

Accordingly, the Westinghouse X-ray Corporation installed, and its technicians operated, a condenser discharge apparatus having a capacitance of one-half microfarad and a voltage range up

to and including 100 kv.p. The size of the focal spot of their tube was approximately 3 mm. This equipment was used with a roentgen-photographic unit for producing 35 mm. images of the fluoroscopic screen. The distance employed was 40 inches, and the exposure time was approximately 1/15 second.

The General Electric X-ray Corporation installed, and its technicians operated, a so-called conventional type, 200 ma. machine using a tube having an effective focal spot of approximately 4.5 mm. This was used with a roentgen-photographic unit to produce 4 x 5 in. films. The distance used was 40 inches, and the exposure time was 2/10 second.

For the 14 x 17 in. films we used 500 ma. equipment employing a rotating-anode tube having an effective focal spot of 2 mm. The distance used was 72 inches, and the time was 1/30 second.

It is obvious that any advantage to be gained from the standpoint of the best diagnostic technic was distinctly in favor of the 14 x 17 in. film, not only because of its size but also because of the shorter exposure time.

The patients were x-rayed by all three methods successively, being routed first to the 35 mm. unit, then to the 4 x 5 in. unit, and finally to the 14 x 17 in. machine. They were x-rayed by all three methods at the rate of about 40 per hour, or a total of about 250 per day.

The 35 mm. films were read by projection on a screen with enlargement to about 6 x 6 in. and also by transmitted light with about two times magnification. The 4 x 5 in. films were read by transmitted light, without magnification.

The films were interpreted by the staff of the division, each member reading the films without any consultation with the others. The two sets of small films were read first to avoid the carrying over of any impressions regarding individual cases from the more accurate 14 x 17 in. films. When the readings of the small films were completed, those regarding which a difference of opinion existed were reviewed and the final diagnosis transferred to a single list which was used for comparison with the 14 x 17 in. films. After the 14 x 17 in. films were read by the staff members separately, they were reviewed at a consultation of all the members, and the final diagnoses determined at that conference were used as the standards by which the other films were judged.

TABLE 1

Comparison of Findings of 14 x 17 in. with 4 x 5 in. and 35 mm. Films

Clinically Significant Tuberculosis **	*14 x 17 in.*	*4 x 5 in.*			*35 mm.*		
	975 Films Interpreted	*944 Films Interpreted*			*614 Films Interpreted*		
		Correctly Diagnosed	*Not Diagnosed*	*Films Missing or Spoiled*	*Correctly Diagnosed*	*Not Diagnosed*	*Films Missing or Spoiled*
Minimal	30	28	1	1	19	4	7
Moderately advanced	20	19	0	1	14	0	6
Far advanced	12	12	0	0	12	0	0
Total	62	59	1	2	45	4	13
Healed Reinfection *	68	62	3	3	32	17	19
Suspicious *	9	6	2	1	4	2	3
Calcium	172	129	40	3	34	72	66
Pleurisy	10	8	2	0	6	2	2
Non-tuberculous Pulm. Path.*	22	20	2	0	11	5	6
Cardiovascular	27	20	3	4	7	3	17
Anomalies and Misc.	24	19	5	0	9	11	4

* The diagnoses on the small films were considered correct if they were called any one of this group.

In examining the small films, an attempt was made to establish a definite diagnosis in each case. However, in the analysis of the findings it was decided that, since the purpose of the small films is to screen out those patients who require full size films for further study, the criteria used in the classification of these cases must be quite liberal. This reasoning is also used in the paper of Douglas and Birkelo. If, for instance, a lesion was classified as healed reinfection in the 4 x 5 in. film, suspicious in the 35 mm., and proved to be a minimal, clinically significant lesion in the 14 x 17 in. film, it was felt that a correct diagnosis had been made on both small films. The same principle was applied to other types of pathology (Table 1).

14 x 17 IN. FILMS

A total of 975 14 x 17 in. films were interpreted, 14 were missing, and 11 were technically unsatisfactory. The number of cases of clinically significant pulmonary tuberculosis diagnosed was 62, or 6.4 per cent. Thirty (48.4 per cent) of the cases were minimal, 20 (32.3 per cent) moderately advanced, and 12 (19.4 per cent) far advanced. In addition, 68 cases were diagnosed as healed reinfection type tuberculosis, and 9 as suspicious, requiring further study for a more definite diagnosis.

4 x 5 IN. FILMS

Sixteen films were missing and 40 were technically unsatisfactory, so that only 944 were compared with the corresponding 14 x 17 in. films. None of the moderately advanced or far advanced cases of clinically significant tuberculosis were missed. Two of the minimal lesions were called negative on the 4 x 5 in. films. In one of these cases, however, the lesion was very small and was located behind a rib on the small film, while on the 14 x 17 in. film it was projected into the interspace. This problem of the superimposition of pathologic lesions by more opaque anatomical structures is inherent in all flat x-rays of the chest, regardless of the size of the film, so that the failure to make a correct diagnosis on this film should not be considered a deficiency of the diagnostic value of the small films. In fact, the lesion was hidden from view behind a rib in 2 of 4 large films made subsequently of this same patient. Douglas and Birkelo have had the same experience of missing small lesions due to overlying denser structures. The other lesion not diagnosed in the small film was of moderate density, not sharply defined, and located in the periphery of the lung. It is of a type which would probably be missed frequently by the small films.

Exclusive of the first case, therefore, which might have been missed on any flat film, 1 case of minimal tuberculosis was not diagnosed, principally because of the size of the film, an incidence of 3.4 per cent of the minimal lesions, or 1.7 per cent of all cases of tuberculosis.

In the healed reinfection group, 3, or 4.6 per cent, of the possible 65 cases were not recognized.

The 4 x 5 in. films are less accurate in recognizing intrathoracic conditions other than the two mentioned above. Twenty-one per cent of the 248 cases showing calcium, thickened pleura, nontuberculous pulmonary pathology, cardiac lesions, and anomalous conditions in the 14 x 17 in. films were not diagnosed in the 4 x 5 in. films.

On the other hand, 22 of the 14 x 17 in. films did not reveal any evidence of pathology, whereas their respective 4 x 5 in. films were interpreted as follows: 1 clinically significant tuberculosis; 2 healed reinfection tuberculosis; 19 suspicious pulmonary changes.

35 MM. FILMS

Unfortunately for the purposes of this study, considerable technical difficulty

was encountered in the operation of the 35 mm. x-ray unit, and as a result, only 614 such films were available for comparison with the corresponding 14 x 17 in. films.

None of the advanced and moderately advanced cases were missed, but of the 23 minimal lesions present in the corresponding 614 large films, 4 were not diagnosed on the 35 mm. films. There was, therefore, an error of 17.4 per cent among the minimal cases, or 8.2 per cent of all cases of tuberculosis.

In the healed reinfection group, the 35 mm. films were also less accurate than the 4 x 5 in. films, with 17, or 35 per cent, undiagnosed cases, as compared to 4.6 per cent in the latter.

The percentage of error in the group with non-tuberculous intrathoracic lesions was also considerably greater in these films than in the 4 x 5 in., 58 per cent of the possible 160 cases presenting these lesions in the 14 x 17 in. films having been undiagnosed on the 35 mm. films.

Diagnoses were made of clinically significant tuberculosis in 2 cases, of healed reinfection in 20 cases, and of non-tuberculous pulmonary pathology in 6 cases which were not confirmed by the 14 x 17 in. films. Also, 43 other patients were diagnosed as having suspicious pulmonary changes which did not appear in the 14 x 17 in. films.

A factor of considerable importance which is not brought out in the reports of surveys with small films is the extreme fatigue of the roentgenologist following the reading of even a small number of these films. This is particularly true of the 35 mm. size; the glare of light is very tiring to the eyes, whether the films are examined by transmitted or by reflected light. Not more than about 100 films could be read consecutively by any one individual at one time, nor could more than from 300 to 400 films be read during any one day, without developing considerable eyestrain. In this, our experience is very different from those observers who claim to have been able to read 1,000 films in a 3 hour period.[7] Unquestionably improvement in the devices for reading the films comfortably will be followed by increased accuracy of diagnosis.

Since the main reason for the use of small films is the economic one, it is important to determine the final net cost of film for each case of clinically significant tuberculosis found by each method. The personnel required for each method being comparable, and without accounting for the original cost of equipment, the average cost of a completely processed 14 x 17 in. film is 65 cents, while that of the 4 x 5 in. film has been estimated at 6 cents, and that of the 35 mm. film at 3 cents. On this basis, and taking into account the number of retakes with 14 x 17 in. films necessary in each group, the net cost of films for each tuberculosis case found in this study would have been $10.22 if 14 x 17 in. films alone had been used; $2.08 if 35 mm. films, and $1.85 if 4 x 5 in. films had been used, as shown in Table 2. It will thus be seen that, from the purely financial point of view, little difference exists between the small size films, although the 35 mm. film appears to be slightly more expensive than the 4 x 5 in. This is due to the fact that the smaller the size of the films, the more difficult appeared their interpretation, and consequently the greater was the number of retakes with 14 x 17 in. films necessary to arrive at a definite diagnosis. In our case, for instance, 71, or 11.6 per cent, of the 35 mm. films required retakes on 14 x 17 in. films, as compared to 22, or 2.3 per cent, of the 4 x 5 in. films.

After due consideration of all the factors involved in mass tuberculosis surveys, we are led to the conclusion that, while both fluorophotographic methods are relatively adequate for the purpose,

TABLE 2

Relative Costs of 4 x 5 in., 35 mm., and 14 x 17 in. Films

4 x 5 in. Films		
944 satisfactory films	@ .06	$ 56.64
59 retakes on 14 x 17 in. films for confirmatory diagnosis	@ .65	38.35
22 retakes on 14 x 17 in. films of cases incorrectly diagnosed pathological	@ .65	14.30
Total cost of films		$109.29
Total cost of films per case found		1.85
35 mm. Films		
614 satisfactory films	@ .03	$ 18.42
45 retakes on 14 x 17 in. films for confirmatory diagnosis	@ .65	29.25
71 retakes on 14 x 17 in. films of cases incorrectly diagnosed pathological	@ .65	46.15
Total cost of films		$ 93.82
Total cost of films per case found		2.08
14 x 17 in. Films		
975 satisfactory films	@ .65	$633.75
Total cost of films per case found		10.22

the 4 x 5 in. films are preferable because of their greater accuracy in the diagnosis of clinically significant tuberculosis, the greater ease with which these films can be read, and the cost.

The results of this study show that by using the 4 x 5 in. film, 98.3 per cent of all cases of clinically significant tuberculosis would have been found, while by using the 35 mm., only 91.8 per cent of the cases would have been diagnosed. In the case of minimal lesions, the 4 x 5 in. films were accurate in 96.6 per cent, and the 35 mm. in 82.6 per cent. Both were 100 per cent accurate in diagnosing moderately advanced and far advanced cases. Since this study has been completed, we have had an opportunity to review some 4 x 5 in. stereoscopic films. The quality of these films should enhance the value of small films for screening without appreciably increasing the cost. We have been informed that technics to provide 35 mm. stereoscopic films have also been developed.

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Epidemiology of Poliomyelitis in Detroit in 1939*

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POLIOMYELITIS has occurred in sizeable outbreaks in this country since 1916, the first large epidemic having occurred in New York State in that year. Prior to this and since, large outbreaks have occurred in foreign countries, notably in the Scandinavian countries, Germany, Australia, New Zealand, and Canada. Many of the outbreaks have been studied quite exhaustively from an epidemiological standpoint. Aside from the more routine epidemiological information available for most communicable diseases, evidence as to the portal of entry, mode of transfer, and spread has been meager and inconclusive; actually, very little is known concerning the epidemiology of poliomyelitis. During 1939, 521 poliomyelitis cases with 23 deaths were reported in Detroit, the largest outbreak in the experience of this city. This paper deals with a few of the epidemiological findings which grew out of the field studies carried on during the duration of the outbreak.

Prior to July, 2 cases were reported, one in May and the other in June. By the middle of July 7 cases had been notified, but it was not until July 25 that we realized the attack rate would probably be high and that the disease was becoming prevalent in Detroit earlier in the summer than heretofore. The Department of Health planned administrative procedures to deal with a major outbreak, took measures to keep the public informed of the prevalence of the disease, and gave advice relative to control procedures. The coöperation of the medical profession was sought in order to secure the prompt reporting of cases and suspicious cases and to inform physicians concerning currently accepted practices. A more intensive study of reported cases and their relationship to possible modes of transmission was instituted.

Through the courtesy of Surgeon General Parran and Medical Director Leake of the U. S. Public Health Service, Dr. Alexander Gilliam was sent to Detroit directly from the experience of poliomyelitis in Charleston, S. C. Dr. Gilliam and members of the executive staff of the department drafted an epidemiological form patterned after that used in the Charleston outbreak. It was felt that no field epidemiological study should be made without using controls.

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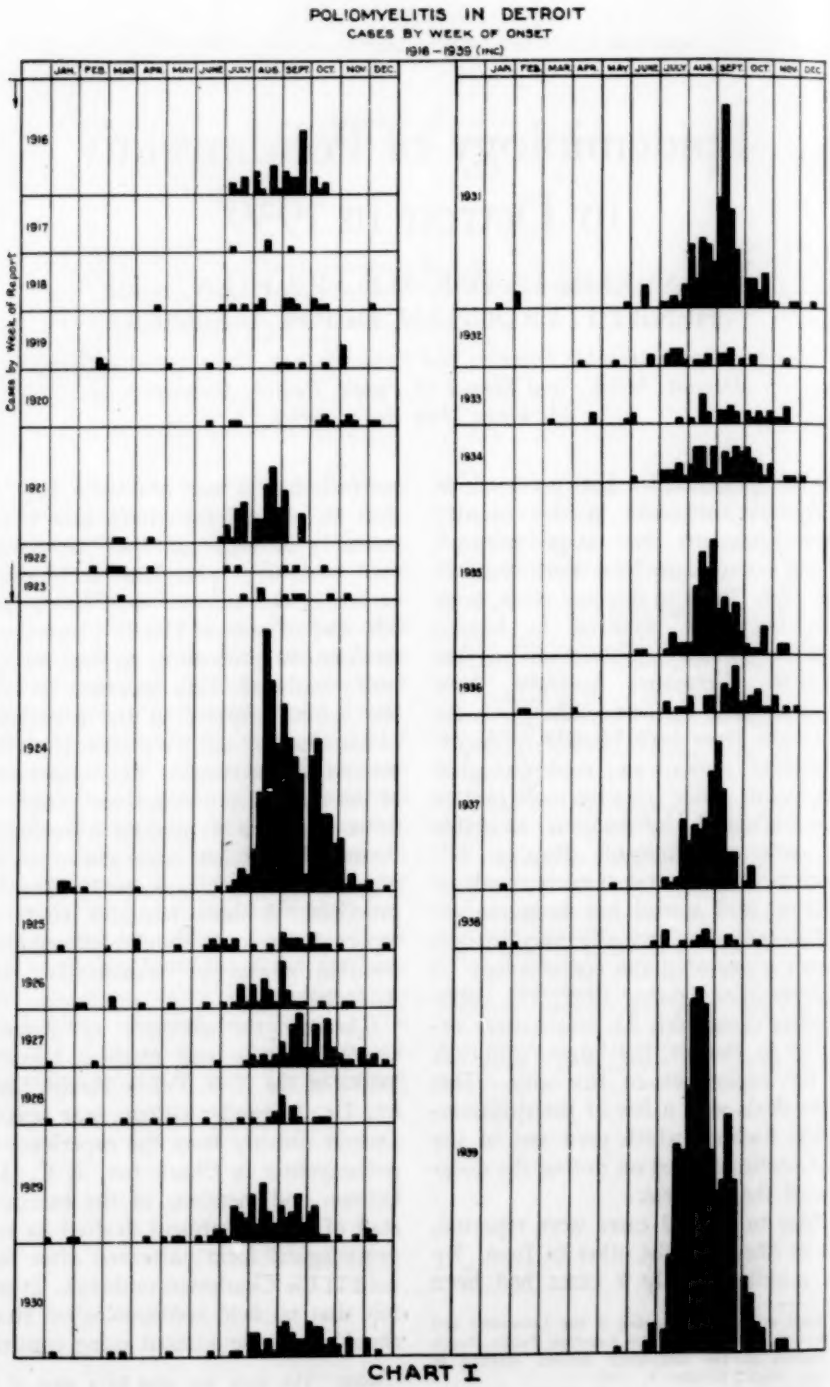
POLIOMYELITIS IN DETROIT
CASES BY WEEK OF ONSET
1918 – 1939 (inc)
Cases by Week of Report
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
1918
1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939

CHART I

Four control groups were used. The first control group consisted of children who were contacts to known cases of poliomyelitis. In order that the selection of case controls be as random as possible, the first contact mentioned by the interviewed parent of the case was chosen as the control. The second control group represented children from homes in the so-called "Special District," a section of the city which was the northern portion of the epidemic area. The third control group comprised children selected from an area in the southwestern part of the city where but few cases were reported. The economic conditions in the second and third control groups were similar. The fourth control group consisted of children found in homes in the immediate vicinity of a children's institution where a small outbreak occurred. The children comprising the second, third, and fourth control groups were from homes in which no known cases of poliomyelitis had occurred. A study of the age distribution of cases and controls revealed no apparent significant variation between them.

POLIOMYELITIS IN AND NEAR DETROIT PRIOR TO JULY, 1939

Before considering the Detroit experience it seems desirable to present the previous occurrence of poliomyelitis in this city and the recent experience in communities near Detroit.

Previous Detroit Experience—Chart I shows the reported cases in the city of Detroit by weeks and years from 1916 through 1939. Prior to 1923 the cases were plotted by week of report, but subsequently cases were plotted by week of onset. It will be observed that in 1916, when the disease was so prevalent in New York City and neighboring communities and states, there were very few cases reported in Detroit. In 1924 there were 359 cases with 60 deaths. More than 70 per cent of the survivors were paralyzed. The number of cases reported before August of that year

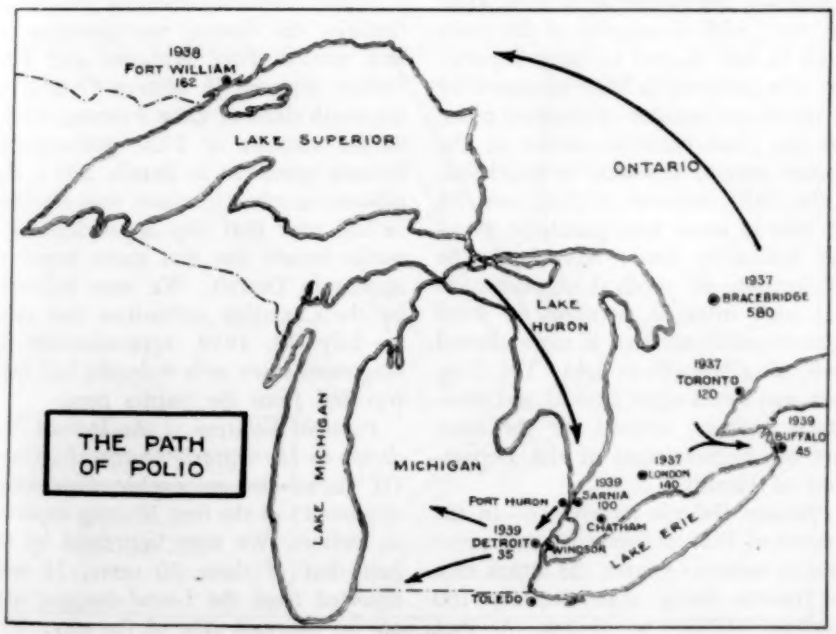

CHART II

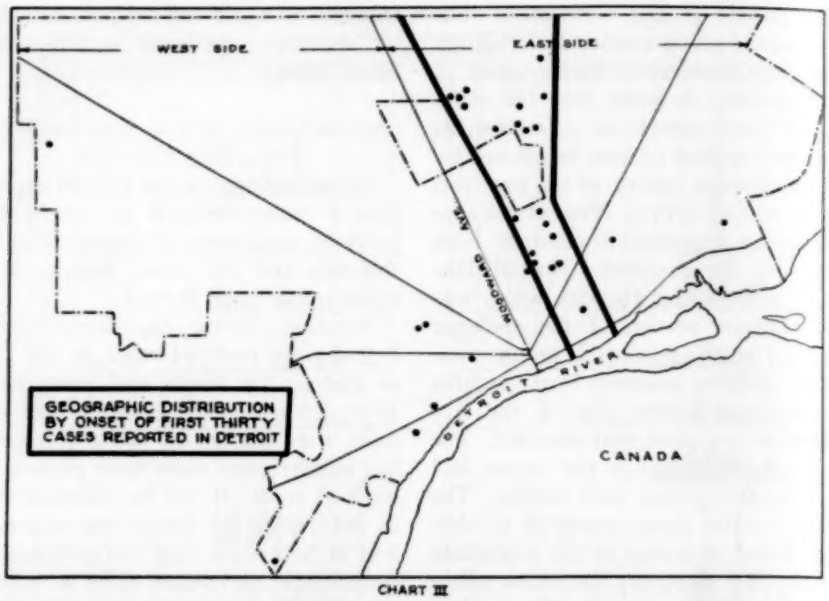

CHART III

was not significant; the peak was reached in mid-August. The disease was again prevalent in 1931 but the peak did not occur until the second week in September. Less noteworthy increases in the disease occurred in 1935 and 1937, with a majority of the cases found in late August or early September. The outbreak in 1939 furnished by far the largest number of reported cases, and the peak occurred earlier in the summer season. It should be noted that in the 1939 outbreak slightly over 55 per cent of cases were paralytic, probably indicating better reporting. The mobilization of medical resources to deal with infantile paralysis in 1939 unquestionably resulted in more clinical cases being brought to light. The diagnosis was based upon clinical and laboratory findings, verified for the most part by diagnosticians of the Department of Health.

Previous Ontario Experience—In the summer of 1937 poliomyelitis was prevalent in eastern Ontario, the attack rate in Toronto being approximately 100 cases per 100,000 population. At that time a few cases were reported in the Windsor area across the river from Detroit but not in Sarnia, opposite Port Huron (Chart II). In 1938, according to information furnished by Dr. John T. Phair, Medical Officer of Health for Ontario, the disease was prevalent in and around Fort Williams and Port Arthur, situated in western Ontario on the north shore of Lake Superior. Early in the summer of 1939, poliomyelitis became prevalent in Sarnia, and a significant number of cases was reported in and near that city approximately 6 weeks before the first cases began to appear in Detroit. We were informed by the Canadian authorities that prior to July 20, 1939, approximately 20 diagnosed cases with 4 deaths had been reported from the Sarnia area.

Possible Relation of the Detroit Epidemic to the Ontario Outbreak—Chart III shows the geographic distribution (by onset) of the first 30 cases reported in Detroit. We were impressed by the fact that of these 30 cases, 21 were reported from the funnel-shapped area on the neareast side of the city. This

was impressively different from the geographic distribution of our previous outbreaks. During the past several years poliomyelitis had been reported in greater numbers on the west side of the city and in 1939 the opposite was true.

With the data on Chart III before us and with candor as to the possible source of infection, we began to investigate the likelihood of the disease having been imported from the Sarnia area, either via Port Huron or Windsor. In the neareast side of Detroit there are located two important public markets and several packinghouses (Chart IV). On the west side there are a public market and a number of large packinghouses. In the east side area there are three dog pounds at which unclaimed animals are destroyed, collected, and disposed of at rendering plants located on the west side of the city. The largest dog pound in the city is that operated by the Police Department and located on the west side.

We thought it worth while to examine the possibility of an animal reservoir which might have brought the infection in from Canada and from which an insect vector might have spread the infection in the neareast side. The highways by which cattle are brought to the packinghouses and the main artery of the Grand Trunk Railroad all lie in this neareast side area. One branch of the Grand Trunk Railroad comes directly from the Port Huron and Sarnia area.

Complete records are kept by the United States Government of all cattle, horses, sheep, poultry, and other animals brought in at Port Huron or Detroit. We traced from government records, at point of shipment in Canada to place of final disposition in Detroit, 4,248 head of cattle transported across the border during the months April to July inclusive, and found that 1,964 head of cattle went to packinghouses in the neareast side area while 2,284 went to the west side of the city, where but few of the early cases of poliomyelitis occurred. Inquiry at the packinghouses, where the Health Department maintains

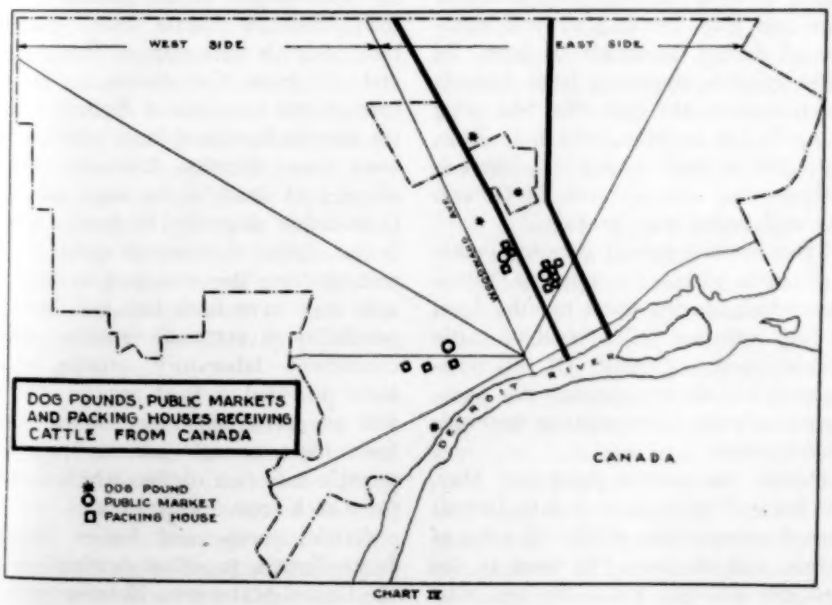

CHART IV

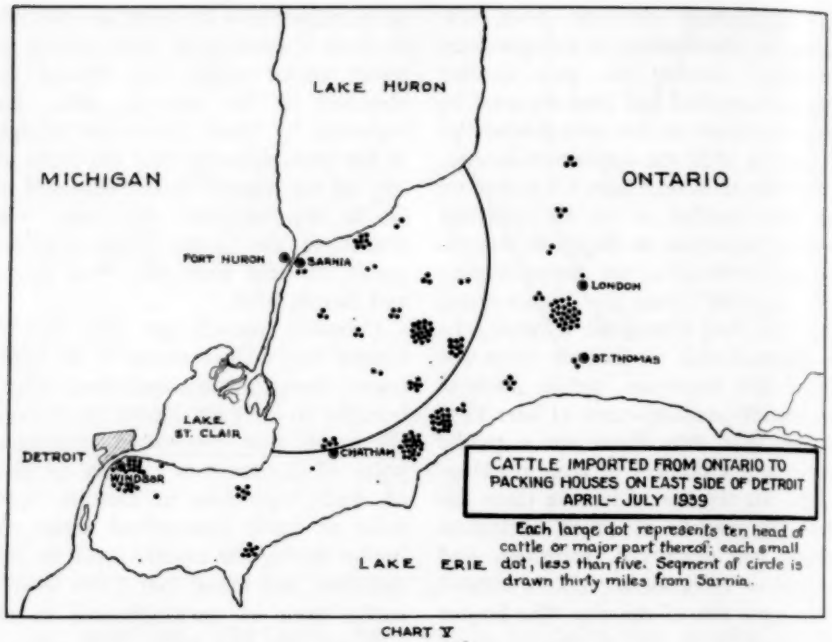
LAKE HURON
MICHIGAN
ONTARIO
PORT HURON
SARNIA
LONDON
ST THOMAS
LAKE ST. CLAIR
DETROIT
WINDSOR
CHATHAM
LAKE ERIE
CATTLE IMPORTED FROM ONTARIO TO PACKING HOUSES ON EAST SIDE OF DETROIT APRIL– JULY 1939
Each large dot represents ten head of cattle or major part thereof; each small dot, less than five. Segment of circle is drawn thirty miles from Sarnia.

CHART V

veterinarians for post-mortem inspection, indicated no evidence of animal paralysis.

The shipment of animals from Canada to Detroit was relatively heavy in April and July, less in May, and virtually nil during the month of June. Of 1,964 animals imported from Canada which went to the east side, 563 came in April, 386 in May, only 6 in June, and 1,009 in July (Chart V). There is evidence that the outbreak in Ontario was well under way in June.

There were 9 animal shipping points in Canada within 30 miles of Sarnia from which, during the 4 months April to July inclusive, 2,266 head of cattle were shipped to Detroit. Of this number only 525 went to the east side packinghouses while 1,741 went to west side establishments.

During the months April and May, 978 head of cattle were sent to Detroit from 8 communities within 30 miles of Sarnia, and of these 787 went to the west side and only 191 to the east side. There seems to be nothing significant from these data which could justify the conclusion that cattle served as a reservoir of infection and were a factor in the transmission of the disease to Detroit from the Sarnia area. Twenty head of cattle were shipped from Sarnia and 45 from Camalachie, a nearby town, to the east side of Detroit during the months April and May. During the same two months, however, Sarnia shipped 25 head to the west side and Camalachie shipped 159 head. There is the chance that one or more of the animals from this area sent to the east side may have been infected, but the possibility is extremely remote. Only concurrent laboratory studies could have provided a final answer. There was no opportunity to examine stools from these animals nor to study the possible infection of flies which accompany such animal shipments.

Cattle, sheep, and horses shipped from Canada to other destinations in the United States were likewise studied,

and we found no evidence that animals were shipped from the Sarnia area to communities in the United States where poliomyelitis was significantly present during the summer of 1939.

The first cases in Sarnia gave a history of onset within a few weeks after the opening of navigation on the Great Lakes.[1] Sarnia is the most important shipping point on the lower Ontario peninsula for produce sent to Port Arthur. It is significant that the principal travel between these two ports is by water; there is no through highway around Georgian Bay and the north shore of Lake Superior. Land and railroad travel from Sarnia to Port Arthur is via Toronto. Direct communication between Port Arthur and Sarnia is established only after the opening of navigation which is usually in May. Travel between Sarnia and the Detroit area is considerable during the late spring and summer. Many Detroiters have their summer homes on the east shore of Lake Huron above Sarnia and for the most part travel via automobile, crossing the border at the Blue Water Bridge between Port Huron and the Canadian shore. The possibility of the transmission of infection by person-to-person contact via the navigation route with a possible reservoir of infection in Port Arthur during the winter months is suggested. We admit, however, complete uncertainty as to the manner in which the infection may have been brought into Detroit. Epidemiological studies show that some of the first Detroit cases (by onset) had been visiting friends and relatives in the Sarnia area.

FIRST CASES IN DETROIT

Chart III shows the unusual prevalence of the first 30 cases in a funnel-shaped area on the neareast side of Detroit. Nine cases were reported from the more congested Eastern Market and packinghouse districts. This section of the city is heavily populated. It is significant that 11 of the early cases were reported from the "Special District," an area north of the city of Hamtramck, where the population is less dense, but where growth has been extensive since 1930. Until the data for the 1940 census become available, no estimate can be made of the attack rate in this or other districts. Our impression from a knowledge of the area and density of population is that the attack rate in the "Special District" was higher than elsewhere in the city.

Of the first 62 cases by onset in Detroit (prior to July 24) 45 were reported from the east side and 17 from the west side of the city. Again, of the 45 east side cases 19 were reported from the "Special District."

Mindful of the possibility of an animal reservoir, a survey was made, with the coöperation of 70 veterinarians in private practice, of all privately owned and public dog kennels to ascertain whether there had been any increase in canine paralysis. There was no evidence of any increase in paralysis above what is commonly to be anticipated at this time of the year. The lack of laboratory facilities did not permit of more conclusive studies based upon autopsies of dogs, examination of canine stools, investigation of insects associated with dogs, and other factors.

CLASSIFICATION OF SOURCE OF INFECTION

Epidemiological case histories were obtained by 50 public health nurses who received special training and instruction for this purpose. Many hours were consumed in careful planning of the work before the nurses were sent into the field and the data were concurrently reviewed, studied, and roughly classified by epidemiologists. As the Detroit regulations for the control of poliomyelitis provided for holding exposed children (through

high school age) under a warning sign for 14 days following last exposure, and as families living in the area where poliomyelitis was prevalent became familiar with those regulations, there was undoubtedly a tendency for many families to cover up valuable information concerning possible contact with a case or suspicious case. The same nurses who filled out the epidemiological forms were charged with supervision of quarantine and isolation. It would seem reasonable that where evidence of personal contact was found between cases, the very minimum of such contact was recorded. Had isolation restrictions been less severe, we might have been more successful in securing an insight into the movements and life habits of families. During the hot summer months no family desires to have one or more children under a warning sign, deprived of association with playmates, and denied the company of the family when off the premises.

In spite of this limitation some degree of success was obtained in discovering sources of infection. The following classifications were employed:

1. Cases for which there was no definitely ascribable suspected source. Epidemiological case records, which were reviewed by an epidemiologist, revealed no admitted contact with a case of poliomyelitis or an illness suspicious of poliomyelitis during an interval which would warrant a definite conclusion as to source of infection. The interval of probable infectiousness, namely, that period from date of last exposure to a diagnosed case to the onset of a subsequent case, was arbitrarily set at 4 to 14 days inclusive. If two cases appeared in the same household or child contact group and the interval was less than 4 days, we concluded that there was probably a common source of infection. The limits of the incubation period for poliomyelitis remain indefinite, but for the purpose of this study the period 4 to 14 days was chosen and uniformly used.

2. Cases in which there was direct contact at the proper time with a diagnosed case of poliomyelitis.

3. Cases in which there was reasonable evidence of suspicious direct contact with a known case.

4. Cases in which direct contact with a known carrier of poliomyelitis occurred. This happened in a single instance. A child was exposed to a proven carrier at a children's institution and the virus was recovered from the stools of the carrier.

5. Cases which were in direct contact with a suspicious case of poliomyelitis. The suspicious cases were officially held under quarantine by the Department of Health as such, pending a final diagnosis, but were finally not called cases, although it is likely that many of them were clinically abortive in type.

6. Cases for which there was evidence of direct contact to a suspected carrier or missed case—such carriers or missed cases, of course, were not and could not be proved except by laboratory procedure.

7. Cases with proper exposure to a familial or extrafamilial illness, the symptoms of which were compatible with the first phase of poliomyelitis but lacked clinical evidence of central nervous system involvement.

8. Cases which by date of onset could be classified as having definitely contracted the disease outside of Detroit.

9. Cases in which the evidence was such that the case probably contracted the infection outside the city of Detroit.

10. Cases in which reallocation was officially made by the Michigan Department of Health to an outside community. Reallocations are officially made by the State Health Department only for communities within Michigan. In instances where the source of infection could be definitely ascribed to a sojourn in Canada the classification "outside" was used (No. 8).

Based upon this rough classification, Table 1 was prepared, showing the source of infection by onset in May–June, July, August, September, and subsequent to September.

In the series of 521 cases, 364 were classified in the group with an unknown source of infection (No. 1). This represents 69.9 per cent of all cases. Sixty-one, or 11.7 per cent, were classified as having had direct or suspicious direct contact with a reported case, or direct contact to a proven carrier (Nos. 2, 3, 4). In 70 cases, or 13.4 per cent

TABLE 1

Poliomyelitis in Detroit, 1939

Source of Infection by Month

Source of Infection	Month					Totals	
	May–June	July	Aug.	Sept.	Oct.–Dec.		
1. Unknown	6	73	163	92	30	364	
2. Direct contact	0	12	19	14	4	49	
3. Susp. dir. cont.	0	4	3	4	0	11	61
4. Dir. cont. to carrier	0	0	1	0	0	1	
5. Dir. cont. to susp. case	0	3	0	0	0	3	
6. Susp. indirec. cont.	0	1	2	0	0	3	
7. Exposure to illness	0	6	43	18	3	70	
8. Outside	0	0	2	2	1	5	20
9. Probable outside	1	4	9	1	0	15	
10. Reallocated *	0	3	2	2	0	7	
Totals	7	103	242	131	38	521	

* Reallocated cases are *not* included in the totals

of the total, there was a history of exposure to an illness suggestive of the symptoms of the first phase of poliomyelitis (No. 7). In 20 instances, or 3.8 per cent, the source of infection was either known or reasonably suspected of being outside of the City of Detroit (Nos. 8, 9).

We were especially interested in the 56 cases which resided in the "Special District" as it was here that many of the first cases by onset occurred and it was here that the attack rate was the highest.

POLIOMYELITIS IN THE "SPECIAL DISTRICT"

The funnel-shaped area previously described was called the epidemic area. The northern portion of the epidemic area was designated the "Special District," and here occurred a large proportion of the first cases reported in the city. A total of 56 cases was reported in the district. The cases by week of onset are shown in Chart VI. In 20, or 35.7 per cent of instances, a probable source of infection was found. Dividing the 56 cases by time of onset into two groups, those with onset prior to August 15, of which there were 40, and those with onset subsequent to August 15, of which there were 16, we find a strong argument for the need of making a good epidemiological investigation before the disease has become generally disseminated throughout the community. Of the first 40 cases in this "Special District" (reported prior to August 15) a definitely classified probable source of infection was found in 18 cases, or 45 per cent of the total. Of these 18, 13 were considered as being in direct contact or there was evidence of suspicious direct contact (by history) with other cases. These 13

cases represent 32.5 per cent of the first 40 cases in the area.

While a definitely classified source of infection was found for 18 of the first 40 cases, such source of infection was found only in 2 instances for the last 16 cases reported (subsequent to August 15). While 13 of the first group (40) of cases could be ascribed to a direct or a suspicious direct contact, only one of the last 16 cases was so classified.

In the "Special District" there were 12 children who gave a history of playing on the White School playground. Histories obtained from families showed that there had been direct contact between 5 cases which played at the White School and cases of poliomyelitis with onset at the proper time. In addition to these 5 cases there were 2 others which gave a history indicating suspicious direct contact and 1 with suspicious indirect contact. This leaves 4 cases in which there is a definite history of the children playing at the White School grounds but no admitted personal contact with children who developed infantile paralysis. Therefore, we have classified these 4 cases with those for which there was no satisfactory evidence of source of infection. It is reasonable to consider that contact did exist on the playground although no admission of such contact was made by the parents or children.

EPIDEMIOLOGICAL FACTORS STUDIED

The epidemiological form used in this study allowed for the collection of an extensive amount of information for each case and control. Numerous factors which might influence the occurrence of poliomyelitis were studied. These included, besides data covering onset, age, sex, and color, the following: interval between onset and report of a case, stress or illness, previous inoculation against other communicable diseases, previous history of other communicable diseases, preventive measures taken by the family, places visited by the patient within one month of onset of illness, the number of familial and extrafamilial contacts, economic status of the family, the number of rooms per family, sleeping accommodations, the number of pets (dogs, cats, birds) in the household and in the neighborhood; reliability of information; tonsillectomy and adenoidectomy within one year and more than one year before, among others.

CHART VI—Poliomyelitis in Special District by Week of Onset and Source of Infection

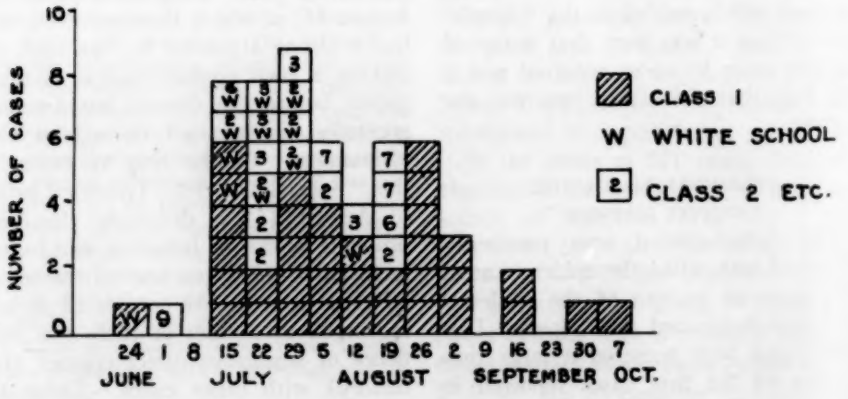

TABLE 2

Poliomyelitis in Detroit, 1939

Cases, Deaths, and Controls by History of Stress or Illness Within 4 to 14 Days of the Onset of Poliomyelitis

		Stress or Illness		No Stress or Illness	
	Total	Number	Per cent	Number	Per cent
All cases	521	106	20.3	415	79.7
Deaths	23	8	34.8	15	65.2
Case controls	497	27	5.4	470	94.6
Spec. Dist. controls	129	7	5.4	122	94.6
West Side controls	167	15	9.0	152	91.0
Child. inst. controls	141	8	5.7	133	94.3

Analysis of the various factors studied revealed negative information on all save stress and tonsillectomy and adenoidectomy.

Both the clinician and epidemiologist have noted the frequency of a history of stress or strain prior to the onset of poliomyelitis. This factor was studied with relation to the time of occurrence of stress or illness, its incidence with relation to clinical type, and the occurrence among cases, case controls, and the other control groups used in the study. The effect of stress on cases which died or recovered and on control groups is shown in Table 2. Here it will be noted that in 34.8 per cent of the patients who died there was a history of stress or previous illness, whereas all patients, whether they had paralysis or not, gave a history of stress or illness prior to onset in 20.3 per cent of instances. A history of stress or illness among case controls was obtained in only 5.4 per cent, and for the remaining three control groups it varied between 5.4 and 9.0. Too much emphasis should not be placed upon data of this type, for there are evident weaknesses in history of illness obtained by questioning. Parents of a patient ill with poliomyelitis are far more likely to recall an illness or injury just prior to the onset of the disease than are parents of children used as controls.

The question of the effect of tonsillectomy directly preceding the onset of poliomyelitis has been commented upon by numerous authors, the earliest mention being made by Ayer,[2] and Aycock and Luther,[3] and reviewed and added to most recently by Stillerman and Fischer.[4] Various factors were studied with relation to tonsillectomy, namely, the clinical type of poliomyelitis, age, sex, and the period of time tonsillectomy was performed prior to the onset of poliomyelitis. In Table 3

TABLE 3

Poliomyelitis in Detroit, 1939

Cases, Deaths, and Controls by Tonsillectomy Status

		No Tonsillectomy		Tonsillectomy	
	Total	Number	Per cent	Number	Per cent
All cases	521	306	58.7	215	41.3
Deaths	23	3	(13.0)	20	87.0
Case controls	497	364	73.2	133	26.7
Spec. Dist. controls	129	113	87.6	16	12.5
West Side controls	167	138	82.6	29	17.4
Child. inst. controls	141	89	63.1	52	36.9

the tonsillectomy status of cases, deaths, and controls is shown. We find that among the 23 deaths, 20, or 87 per cent, had a tonsillectomy at some time or other.

Among the 521 cases (including deaths) tonsillectomy had been performed in 41.3 per cent. With reference to the case controls, in 26.7 per cent the tonsils had been removed. Among the "Special District" and west side controls (children from geographic areas where the economic status was low), 12.5 and 17.4 per cent respectively of the group had tonsillectomies. The Children's Institution controls were from a district where the economic status is good, and among this group the tonsils were absent in 36.9 per cent. The proportion of persons who had tonsillectomy performed within one month of onset was as follows: deaths 5.0 per cent, cases 5.1 per cent, and case controls 7.5 per cent.

Previous studies have shown that persons who develop poliomyelitis within one month of tonsillectomy usually suffer from higher center paralysis. In this experience non-tonsillectomized patients developed bulbar paralysis in 4.2 per cent of cases while patients previously tonsillectomized, whether within one month, within one year or over a year of the onset of poliomyelitis, developed bulbar paralysis in 27 per cent of cases. Comment is deferred until such time as all tonsillectomy data obtained in this study can be presented in its entirety.

GROUPS OF SPECIAL INTEREST

Certain cases or groups of cases with special circumstances surrounding them appeared as likely subjects for detailed epidemiological and laboratory study. One such instance in the outbreak was the story of 5 cases which occurred in a children's home and which has been reported by Kramer, Gilliam, and Molner.[5] In this institution in one section of which were housed 20 infants and preschool children from 2 months to 5 years of age, there occurred 5 cases, 1 terminating fatally, the other 4 being nonparalytic cases. The children in this institution were under very excellent medical care, and routine records were kept of their health status including the recording of temperature twice daily. The virus of poliomyelitis was recovered from 3 of 12 healthy children, contacts to the cases, and from 2 of 3 children who had a fever of from one to two days' duration. The virus was also found in the stool of 1 healthy adult among 8 attendants who were in close contact with the children. We regret that laboratory facilities did not permit the application of this intensive study method to all interesting groups.

COMMENT

There are many cases of special interest which could have been mentioned. Would it not be desirable to study stools, nasal washings, bloods, spinal fluids, autopsy material from diagnosed cases, suspicious cases, illnesses with symptoms suggestive of the first phase of poliomyelitis, contacts and control groups, and tie all of these data in with a sound epidemiological study? In Detroit samples of sewage were analyzed and water obtained from wading pools and swimming pools was studied. Stools and excretions should be collected from cattle, sheep, horses, dogs, and other animals, as well as from birds and insects, and examined for the presence of poliomyelitis virus. To be effective, however, it is our judgment that the epidemiologist and virologist must be on the job early in the outbreak.

There is ample evidence in this study to indicate the need of making a good epidemiological investigation before the disease has become generally disseminated throughout the community. To attempt such a study three or four

weeks after a significant increase in the incidence of the disease would be less profitable.

It may be assumed for the sake of argument that with an increase in number of clinical cases there occurs an increase in carriers and missed cases, aiding chance and unrecognized contact with sources of infection. At the beginning of an outbreak the association between individuals, diagnosed cases, and possible foci of infection is more apparent due to the limited area in which the population has been attacked and possibly due to a more virulent virus as suggested by the high fatality rate reported at the beginning of poliomyelitis outbreaks.

In the study of outbreaks of poliomyelitis it has been repeatedly stated that rarely can a personal contact between cases be shown. The Detroit experience indicates that when a careful study is made of each case with a thorough examination of the life habits of the family, personal contact with previous or suspicious cases can be found in about one-third of the instances, providing such an intensive study is made near the beginning of an epidemic. We wonder if any better result could be shown for such a contact-borne disease as diphtheria, eliminating from consideration, of course, such outbreaks as might be due to milk or other food contamination!

During the course of an outbreak of poliomyelitis there are administrative and control practices which demand a great deal of the time of the health officer and his staff. As the number of reported cases grows it becomes increasingly more difficult to obtain epidemiological information within a short time following report of the case. It is impossible to spend the amount of time necessary to obtain the kind of information which might lead to clues. Added to this is the fact of multiple exposure, which makes the tracing of the infection a difficult one. Whether laboratory facilities are available or not, better epidemiological investigation can be carried out in a community during an endemic prevalence than while an epidemic is in progress. We feel that the study of poliomyelitis under combined epidemiological and laboratory auspices is apt to be more productive if the community has been previously sampled over a period of several years, for the determination of the immunity status of children and adults, and the determination of the carrier rate. Thus a base-line can be established which would be of inestimable value when actual cases of poliomyelitis occur in the area at a later date. The study should be conducted in a small town or district where poliomyelitis has not occurred in epidemic form during the past 10 years. Such a study would entail the use of large numbers of animals and adequate laboratory facilities. At the present time the monkey is the only animal which is suitable for experimental studies. The cotton rat, reported as an experimental animal by Armstrong [6] has not yet proved of value for all strains of poliomyelitis virus.

SUMMARY

1. The outstanding epidemiological features of the Detroit epidemic in 1939 have been presented although no detailed consideration has been given in this paper to the numerous factors studied.

2. Because of the geographic distribution of cases the Detroit experience presented an unusual opportunity to study the cases reported early in the outbreak. It is apparent that among the earlier cases a greater proportion were found to have direct contact with other known cases and that later in the epidemic this did not obtain.

3. Extensive epidemiological investigation of poliomyelitis cases may appear desirable. However, little knowledge has been added recently by this method of approach. A study of previously reported epidemics and the Detroit experience leads us to the conclusion that without laboratory facilities for following up important leads uncovered by the epidemiologist, further exhaustive field studies

are not likely to contribute much to the epidemiology of poliomyelitis.

4. We recognize that nothing has been added to a solution of the problem of portal of entry or the mode of transmission of this disease, but we offer the suggestion that epidemiological investigation must be coupled with laboratory studies as the hope of increasing our information concerning poliomyelitis. The finding of poliomyelitis virus in the stools of several apparently well children and in the stools of their attendant was the result of collaboration between the epidemiologist and the virologist.

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Distribution of the Vectors of Equine Encephalomyelitis in Massachusetts*

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THE observation that human beings are susceptible to the virus of equine encephalomyelitis, first made in Massachusetts in 1938, brings to light another infection which must receive attention by public health workers. Undoubtedly human infections with this virus have been occurring previously but have been classed as diseases caused by other neurotropic agents. So far, the number of cases has not been large, but a virus which causes the death of three-quarters of those affected, produces profound cerebral changes in two-thirds of those surviving, allowing less than 10 per cent of those affected to return essentially to normal,[1, 2] must be regarded seriously. The eastern virus, forunately, is more limited in geographic distribution than the less virulent western virus.

ORGANIZATION OF MOSQUITO SURVEY

Following the 1938 outbreak in Massachusetts, a committee was called together by the Commissioner of Public Health, Dr. Paul J. Jakmauh, to consider measures which would give the most hope of affecting the future trend of the disease. Since evidence points to the theory that *Aedes* mosquitoes are the principal vectors of the virus, this committee recommended as the most urgent need the collection of information in regard to the geographic distribution, seasonal prevalence, and the habits of the mosquitoes of the state. Upon the urgent request of the Commissioner, the Governor recommended to the legislature the appropriation of funds to sponsor a WPA project for the purpose of making a mosquito survey. With funds made available in this manner, the field work of the survey was carried out in the summer of 1939.

Since the collections were to be made by individuals with no previous knowledge of entomology, it was necessary to call 40 of the field workers into Boston for a week of training in the methods of recognizing mosquitoes and larvae, the methods of making collections, and the manner of recording information regarding breeding places. The content of this course of training was issued as a mimeographed bulletin for the benefit of those who may wish to organize similar surveys in the future. The instructors in the course were drawn from Harvard University and the

* Read at a Joint Session of the Laboratory and Epidemiology Sections of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 11, 1940.

Massachusetts State Departments of Public Health and Agriculture.

Those who had received instruction in this training course returned to the various counties where they, in turn, trained additional workers in the methods of collection. At the peak, about 100 individuals were engaged in the field work and almost 50 others were employed in the central office and laboratory. In addition to personnel provided by the Work Projects Administration, a technical director and ten entomologists supervised the technical procedures used by the field workers, identified the specimens, and also made special field and laboratory investigations. Fortunately, well trained entomologists were available for these positions. Early in the survey, it became necessary to revise the identification key to the mosquitoes of New England which had been compiled by Tulloch in 1930.[3] The new key was prepared and published by the same author,[4] who was the chief entomologist in the survey, with the assistance of the other members of the technical staff.

Each of the 351 cities and towns in the state was visited weekly, five to ten points being covered at each visit. The collections were forwarded to the central laboratory in Boston at the end of each week. The combined data from the laboratory and the field were compiled and summarized by the office group of WPA workers and recorded on maps and graphs which formed the content of a mimeographed report of the survey.

In addition to the specimens obtained by the regular collectors, many were sent in by volunteers recruited from a large group of official and nonofficial agencies throughout the state. The principal contribution of these volunteers was the gathering of nocturnal biting mosquitoes, as only diurnal biters were collected by the regular personnel.

The information obtained in the survey was quite voluminous. A report compiled by the technical director consisted of 450 typewritten pages, containing 50 charts, 55 maps, and 174 tables. Almost 50,000 separate collections were made, comprising over 275,000 specimens of mosquitoes and larvae. These were distributed among 51 species of 9 genera.

Of the total specimens, 91.4 per cent were larvae (Table 1), and only 8.6 per cent were adults. This distribution was due largely to the plan to base the survey upon collections of larvae, because of the information gained in regard to breeding places, and to the greater ease of their identification. The vicious biting habits of *Aedes* resulted in about half of the specimens of this genus being adults. Because of the difficulty in collecting *Mansonia* larvae,

TABLE 1

Relative Importance of Different Genera Specimens of Adults and Larvae

Massachusetts, 1939

Genus	Adults		Larvae		Total Specimens	Relative Importance: Per cent
	Number	Per cent	Number	Per cent		
Aedes	8,409	46.4	9,733	53.6	18,142	6.6
Anopheles	1,260	3.8	31,728	96.2	32,988	11.9
Culex	7,443	3.5	206,206	96.5	213,649	77.3
Mansonia	6,663	91.1	649	8.9	7,312	2.6
Psorophora	4	44.4	5	55.6	9	0.0
Theobaldia	90	4.3	2,004	95.7	2,094	0.8
Uranotaenia	14	0.6	2,312	99.4	2,326	0.8
Wyeomyia	9	36.0	16	64.0	25	0.0
Orthopodomyia	0	0.0	3	100.0	3	0.0
	23,892	8.6	252,656	91.4	276,548	100.0

TABLE 2

Distribution of Genera by Counties

Combined Total Adults and Larvae

Massachusetts, 1939

County	*Aedes*	*Anopheles*	*Culex*	*Mansonia*	*All Others*	*Total*
Barnstable	6,635	368	23,548	3,286	1,286	35,123
Berkshire	465	3,919	21,814	76	139	26,413
Bristol	744	1,667	11,604	123	129	14,267
Dukes *	2,838	25	8,100	157	551	11,671
Essex	1,472	5,701	22,498	827	136	30,634
Franklin	483	2,512	10,176	19	14	13,204
Hampden	1,335	7,340	9,602	71	195	18,543
Hampshire	307	671	8,000	16	116	9,110
Middlesex	603	2,394	43,668	243	519	47,427
Norfolk	951	736	13,793	625	280	16,385
Plymouth	1,321	2,448	13,041	1,130	848	18,788
Suffolk	122	12	4,609	116	35	4,894
Worcester	866	5,195	23,196	623	209	30,089
Total	18,142	32,988	213,649	7,312	4,457	276,548

* Including Nantucket

which breathe from air cells of submerged plants instead of from the surface of the water, and because of the persistent biting habits of the adults, an even larger proportion of adults of this genus was collected (91.1 per cent).

It is encouraging to know that the most frequently discovered genus was *Culex* (Table 1), no species of which has been incriminated so far as a vector of disease of man, in the latitude of Massachusetts. The next most common genus was *Anopheles*, but malaria is no longer endemic in the state. The genus

TABLE 3

Relative Numerical Importance of Various Species of Aedes

Massachusetts, 1939

	Adults	*Larvae*	*Total*	*Per cent*	*Per cent Vectors* *
Aedes vexans (EW)	1,065	3,359	4,424	25.1	25.1
A. cantator (EW)	1,326	2,643	3,969	22.5	22.5
A. sollicitans (EW)	2,541	1,048	3,589	20.4	20.4
A. canadensis	764	498	1,262	7.2	....
A. atropalpus (E)	184	871	1,055	6.0	6.0
A. cinereus	533	482	1,015	5.8	....
A. aurifer	540	...	540	3.1	....
A. excrucians	482	43	525	3.0	....
A. intrudens	293	48	341	2.0	....
A. triseriatus (E)	204	80	284	1.6	1.6
A. fitchii	195	21	216	1.2	....
A. taeniorhynchus (EW)	20	112	132	0.8	0.8
A. dorsalis (W)	4	79	83	0.5	....
A. stimulans	58	8	66	0.4	....
A. implacabilis	29	10	39	0.2	....
A. trichurus	20	2	22	0.1	....
A. hirsuteron	7	4	11	0.0	....
A. trivittatus	27	2	29	0.1	....
A. punctor	6	....	6	0.0	....
A. communis †	....	....	....	0.0	....
A. impiger †	....	....	....	0.0	....
Total	8,298 ‡	9,310 ‡	17,608 ‡	100.0	76.4

* Vectors of eastern virus.

† Not collected in survey.

(E) = Vector of eastern virus
(W) = Vector of western virus
(EW) = Vector of both viruses

‡ 534 specimens (112 adults and 422 larvae), too young or mutilated to identify, are not included in this total.

Aedes, the third in importance numerically, is the one with which we are concerned in this paper as it contains all those species which have been demonstrated as able to transmit the virus of equine encephalomyelitis.

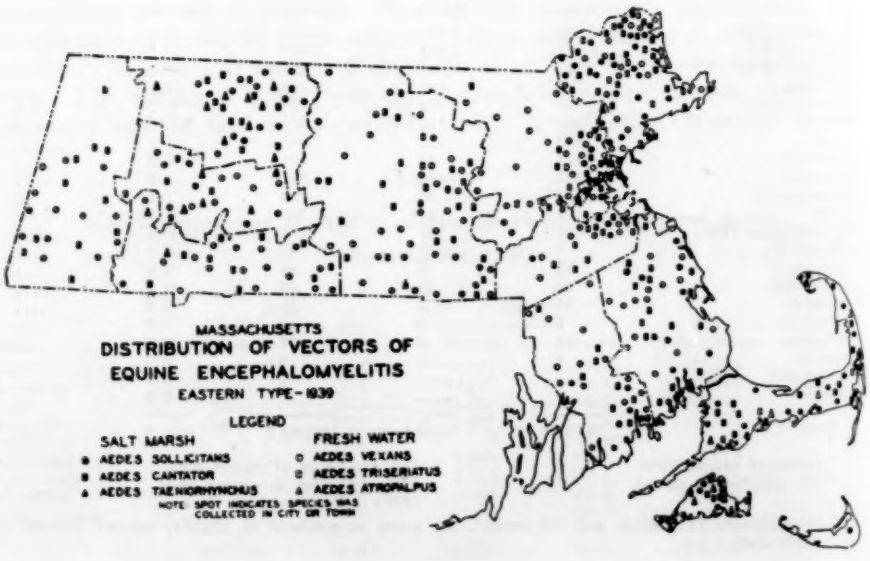
While all genera were found in practically all counties, the relative numerical distribution was uneven (Table 2), partly because volunteer collectors increased the number of specimens much more in some counties than others, but due also to other factors. The larger proportion of *Aedes* in the coastal counties is accounted for largely by the presence of two important salt marsh species not found in the remainder of the state.

PREVALENCE AND DISTRIBUTION OF AEDES MOSQUITOES

Of the 21 species of *Aedes* which have been reported from Massachusetts, 19 species were represented among the specimens collected in the survey (Table 3). Six of these are known to be able to transmit the eastern virus to laboratory animals and to certain wild birds.[5] Of the six, three are salt marsh mosquitoes: *Aedes cantator, A. sollicitans*, and *A. taeniorhynchus;* three breed in fresh water: *Aedes atropalpus, A. triseriatus*, and *A. vexans*. One additional species, *A. dorsalis*, is capable of transmitting the western virus, and there is reason to believe that it, as well as other species of this genus, may be shown eventually to be able to transmit both of the viruses.

The relative numerical importance of the six known vectors of the eastern virus can be noted in Table 3. They comprise 76.4 per cent of the total specimens of *Aedes* collected in the survey. The very fact that the vectors are numerous may be the reason that already laboratory work has been completed to incriminate them. It is difficult to obtain some of the other species in sufficient quantities to perform conclusive experiments. In 1939, Davis [5] was able to confirm the work of others that

MAP 1



Aedes sollicitans, *A. vexans*, and *A. cantator* may act as vectors and demonstrated for the first time that *A. atropalpus* and *A. triseriatus* may transmit the disease. His experiments with other species of the genus were inconclusive because sufficient numbers of mosquitoes were not available.

Three of the six vectors of the eastern virus are much more prevalent than the remaining three (Table 3). *A. vexans* heads the list with 25.1 per cent of the total *Aedes* specimens collected. *A. cantator* and *A. sollicitans* were collected almost as frequently while *A. atropalpus* comprised only 6 per cent of the total and *A. triseriatus* and *A. taeniorhynchus* represented only 1.6 per cent and 0.8 per cent respectively.

Geographical Distribution—These six species were distributed very unevenly. This variation was due in part to natural causes and in part to difference in completeness of collecting in the various counties. In Barnstable, Dukes, and Essex Counties, the activity of volunteers was responsible for the large number of specimens from these areas. The salt marsh varieties were limited, of course, to flight range from salt marshes and tidal-swept streams along the eastern and southern coasts (Map I). *A. sollicitans* has been recorded as flying as far as 40 miles when assisted by winds, but no salt marsh mosquitoes were found more than 15 miles from the nearest breeding place, the greater proportion being found within 5 miles of salt water. This may be accounted for partly by the fact that the prevailing winds during the summer are from the southwest and the west and, rather than assist, actually hamper the flight of salt marsh mosquitoes inland. No salt water reaches the counties of Berkshire, Franklin, Hampshire, Hampden, or Worcester, consequently no salt marsh species were found in these portions of the state (Table 4). Of the fresh water vectors, *A. atropalpus* was limited almost entirely to a circumscribed area in the Connecticut Valley in the western part of the state. *A. triseriatus* and *A. vexans*, on the other

TABLE 4

Numerical Importance of Vectors by Counties

Combined Total of Adults and Larvae

Massachusetts, 1939

County	*A. Atropalpus*	*A. Cantator*	*A. Sollicitans*	*A. Taeniorhynchus*	*A. Triseriatus*	*A. Vexans*	*Total Vectors*	*Total Aedes*	*Per cent Vectors*	*Total All Genera*	*Per cent Vectors*
Barnstable	12	1,780	1,198	0	7	1,751	4,748	6,635	71.6	35,123	13.5
Berkshire	0	0	0	0	45	337	382	465	82.2	26,413	1.4
Bristol	0	242	10	0	12	223	487	744	65.5	14,267	3.4
Dukes *	0	975	1,337	131	3	246	2,692	2,838	93.5	11,671	23.1
Essex	12	413	658	0	15	85	1,183	1,472	80.4	30,634	3.9
Franklin	183	0	0	0	26	198	407	483	84.3	13,204	3.1
Hampden	812	0	0	0	20	408	1,240	1,335	92.9	18,543	6.7
Hampshire	34	0	0	0	13	226	273	307	88.9	9,110	3.0
Middlesex	1	99	98	0	10	188	396	603	65.7	47,427	0.8
Norfolk	0	139	140	0	58	66	423	951	44.5	16,385	2.6
Plymouth	0	269	119	1	9	417	815	1,321	61.7	18,788	4.3
Suffolk	0	30	28	0	10	8	76	122	62.3	4,894	1.5
Worcester	1	0	0	0	56	273	330	866	38.1	30,089	1.1
Total	1,055	3,967	3,588	132	284	4,426	13,452	18,142	74.1	276,548	4.9

* Including Nantucket

TABLE 5

Equine Encephalomyelitis in Horse and Man

Massachusetts

	Human Cases	*Infections in Horses* *		
County	*1938* †	*1938*	*1939*	*1940*
Barnstable	0	0	0	0
Berkshire	0	2	0	0
Bristol	3	106	1	3
Dukes & Nantucket	0	0	0	0
Essex	0	5	0	1
Franklin	0	0	1	0
Hampden	0	0	0	0
Hampshire	0	1	1	2
Middlesex	7	26	1	0
Norfolk	7	55	0	0
Plymouth	10	59	2	0
Suffolk	6	2	0	0
Worcester	1	13	6	3
Total	34	269	12	9

* Reported to Massachusetts Division of Livestock Disease Control.
† No cases discovered in 1939 or 1940.

hand, were collected in every county in the state.

The six vectors represent only 4.9 per cent of the total specimens of all genera collected (Table 4) throughout the state. In Barnstable and Dukes Counties (Cape Cod and the neighboring islands), on the other hand, they formed a much larger proportion, due to the presence of the salt marsh species *Aedes cantator* and *A. sollicitans*. The high number of specimens recorded in the tables gives an impression of greater abundance of mosquitoes in the area, whereas they are actually less prevalent in these counties as compared to others. The high numbers are due to the participation of local mosquito control personnel and large groups of volunteer collectors. Strangely enough, no cases of equine encephalomyelitis have been reported from either county. In contrast, in Bristol, Norfolk, and Plymouth Counties where the disease was most prevalent in 1938 (see Table 5), the vectors formed only a small percentage of the mosquitoes collected (Table 4).

The relative proportion of adults and larvae of the vector species varied from county to county. In some, the per-

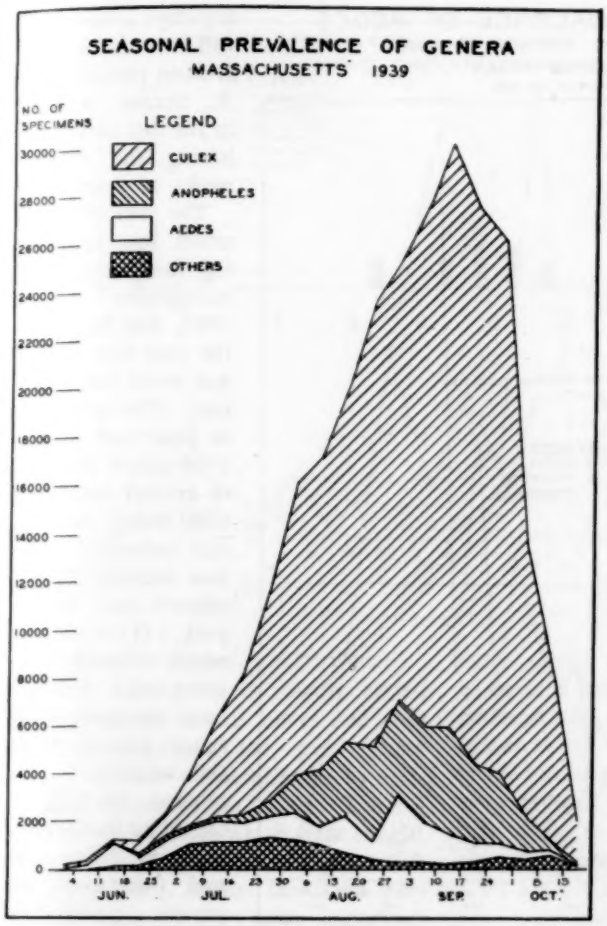
TABLE 6

Proportion of Vectors in Adult and Larval Stages by Counties

Massachusetts, 1939

County	*Adults*	*Larvae*	*Total*	*Per cent Adults*
Barnstable	1,694	3,054	4,748	35.7
Berkshire	49	333	382	12.8
Bristol	97	390	487	19.9
Dukes *	1,180	1,512	2,692	44.0
Essex	918	265	1,183	77.6
Franklin	97	310	407	23.8
Hampden	212	1,028	1,240	17.1
Hampshire	20	253	273	7.3
Middlesex	192	204	396	48.4
Norfolk	291	132	423	68.7
Plymouth	394	421	815	48.3
Suffolk	58	18	76	76.3
Worcester	133	197	330	40.3
Total	5,335	8,117	13,452	39.7

* Including Nantucket

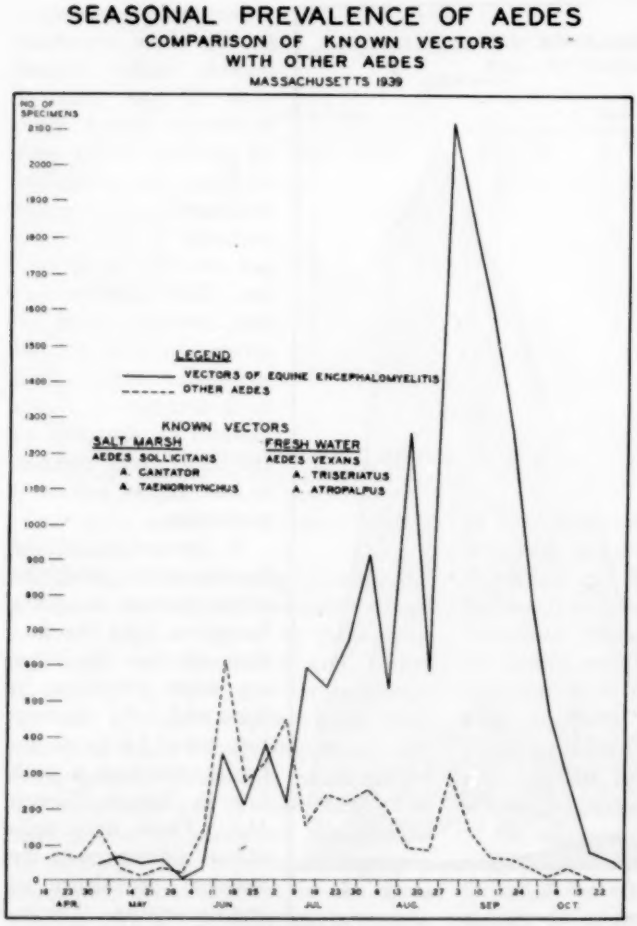


GRAPH I

centage of adults was very high (Table 6) while in others the ratio was reversed. As a general rule, those counties in which a large proportion of the vectors were salt marsh mosquitoes (Table 4), showed a high percentage of adults. In the other counties, because the fresh water vectors are largely woods mosquitoes and are less avid biters, fewer adults were collected. While the larvae of fresh water vectors thrive in pools at the edge of woods, the adults are mainly confined to the denser forested areas where the collectors seldom entered.

Seasonal Prevalence—Of the three important genera, *Aedes* formed over 90 per cent of specimens during May, 50 per cent during most of June, and thereafter decreased in relative importance to less than 5 per cent late in the season. This variation was due, however, to an increase in *Culex* and *Anopheles* rather than to a decrease in *Aedes* (Graph I), the peak of the latter being reached in late August and early September.

A comparison of the known vectors with the other species of *Aedes* brings to light the fact that, whereas the latter are more prevalent in June and July, the vectors continue to increase, reaching a peak late in August (Graph II). There were individual differences in the seasonal prevalence of the six vectors. The incidence of *A. triseriatus* and *A. taeniorhynchus* was never high, a low peak being reached about the middle of August (Graph III). *A. atropalpus* attained slightly higher levels, which were maintained from early August to the middle of September. *A. cantator* showed an increase toward the end of June, decreased in August, and attained the highest level about the middle of September. *A. sollicitans* rose rapidly in prevalence at the end of July, gradually increasing to a peak at the middle of September. *A. vexans* increased slowly after the middle of June, reached a higher level



GRAPH II

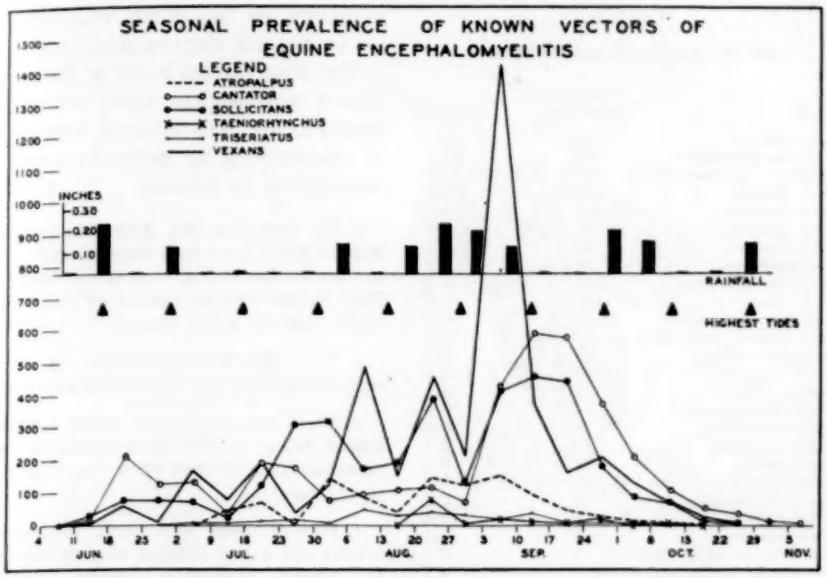
in August, and rose to a high peak early in September.

INFLUENCE OF METEOROLOGICAL CHANGES

Tides and Rainfall—It will be seen from Graph III that in many instances the highest prevalence of salt marsh mosquitoes was found shortly after the highest tides, which occur about every 15 days, but when there was excessive rainfall during the period, the expected increase failed to appear. The fresh water species also tended to decrease during rainy periods but rose rapidly if dry days followed. It will be seen that the greatest prevalence of *A. vexans* occurred in the dry period following the rainy weeks of August.

The year 1939 was much less favorable for the breeding of mosquitoes than 1938, due largely to the fact that rainfall was much below normal. The early rains in June and July in 1938 raised the level of ground water and filled ponds, marshes, and swamps. This was followed by decreased rain in August (Graph IV) which allowed uninterrupted breeding until the onset of the rainy period about the middle of September. In 1939, on the other hand, rainfall was below normal throughout the season, particularly in the early weeks of the summer. The ground water level dropped markedly, marshes and swamps dried up, and some ponds disappeared. The prevalence of mosquitoes was therefore much lower in 1939 than in 1938.

Temperature—The difference in the prevalence of mosquitoes in 1938 and 1939 was also partly due to temperature conditions. In the former year, the summer months were warmer than normal, while in 1939 the early months of the summer were cooler than normal, and even the later months of the season were not warm enough for optimum breeding.



GRAPH III

HABITS OF AEDES MOSQUITOES

Biting Habits—It is usually stated that *Aedes* are vicious biters and that they bite mostly in the open. These statements are substantiated by observations made in the survey. Table 7 gives the mosquitoes which were caught on man. Over two-thirds of the 1,977 specimens were *Aedes, Mansonia perturbans* being the only other important species on the list. On the other hand, *Aedes* species represent less than 10 per cent of all the 3,130 mosquitoes caught in houses (Table 8). Further, it was observed that *Aedes* are not in the habit of frequenting barns and stables, as they formed only 20 per cent of all adults caught in such buildings.

When we consider the genus *Aedes* alone, we find that the adult vectors of the eastern virus represented 86 per cent of those caught on man, 73 per cent of those captured in houses, and 81 per cent of those caught in barns and stables. It is evident, therefore, that if a person or animal is bitten by an *Aedes* mosquito, other than in the early spring months, it is very likely to be of a species known to be able to transmit the eastern virus. Moreover, it was noted that, whereas 60 per cent of the adults captured on man outdoors were vectors of equine encephalomyelitis, only 6 per cent of the adults captured indoors were vectors; and,

TABLE 7

Adult Mosquitoes Caught on Man

Species	*Number of Specimens*	*Per cent*
Aedes sollicitans	738	37.4
Mansonia perturbans	511	25.8
Aedes cantator	311	15.7
Aedes vexans	120	6.0
Aedes aurifer	52	2.6
Aedes canadensis	50	2.5
Aedes cinereus	47	2.4
Culex pipiens	42	2.1
Aedes excrucians	20	1.1
Aedes intrudens	19	0.9
Culex salinarius	14	0.7
Aedes taeniorhynchus	12	0.6
Culex territans	10	0.5
Anopheles punctipennis	7	0.4
Culex apicalis	6	0.3
Aedes fitchii	4	0.2
Aedes triseriatus	3	0.2
Theobaldia melanura	3	0.2
Aedes species unidentified	3	0.2
Aedes stimulans	2	0.1
Anopheles quadrimaculatus	2	0.1
Aedes dorsalis	1	0.0
Total	1,977	100.0

TABLE 8

Adult Mosquitoes Caught in Houses

Species	*Number of Specimens*	*Per cent*
Culex pipiens	973	31.2
Mansonia perturbans	911	29.2
Anopheles quadrimaculatus	407	13.0
Culex apicalis	189	6.0
Culex territans	165	5.3
Culex salinarius	85	2.7
Aedes cantator	56	1.8
Aedes sollicitans	56	1.8
Anopheles punctipennis	46	1.5
Aedes vexans	44	1.4
Anopheles maculipennis	27	0.9
Culex species unidentified	26	0.8
Anopheles walkeri	23	0.7
Aedes triseriatus	19	0.6
Aedes canadensis	17	0.5
Theobaldia melanura	14	0.4
Aedes atropalpus	12	0.4
Aedes excrucians	12	0.4
Aedes aurifer	11	0.3
Aedes cinereus	10	0.3
Aedes trivittatus	9	0.3
Aedes fitchii	6	0.2
Aedes intrudens	3	0.1
Aedes species unidentified	3	0.1
Chaoborinae species unidentified	3	0.1
Aedes stimulans	1	0.0
Aedes punctor	1	0.0
Theobaldia morsitans	1	0.0
Total	3,130	100.0

therefore, the chances of being bitten by a mosquito which may be a vector are perhaps ten times as great outdoors as indoors.

Breeding Habits — As mentioned above, the salt marsh vectors were limited to the proximity of tidal-swept marshes and streams. However, they were able to breed in waters of a wide range of salinity, and were found at many collection points associated with *Culex apicalis, C. pipiens, C. territans,* and *Aedes vexans,* and in fewer numbers with several other fresh water species. Of the three fresh water vectors, *Aedes vexans* was able to adapt itself to a wider variety of water collections than either *A. triseriatus* or *A. atropalpus,* which may account for the relatively higher prevalence of *A. vexans.* The adults of the latter, however, tend to seek the wooded areas and were collected less frequently than salt marsh species because collectors seldom went deep in such areas.

EVIDENCE OF MOSQUITO TRANSMISSION OF EQUINE ENCEPHALOMYELITIS

The observations made in the survey and epidemiological facts collected in regard to the 1938 outbreak which point to transmission by mosquitoes may be summarized as follows:

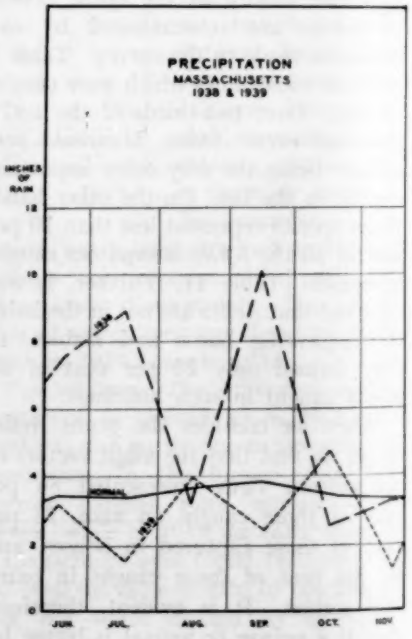
1. Six species of the *Aedes* mosquitoes of Massachusetts have been demonstrated as able to transmit the eastern virus in the laboratory. They formed 76.4 per cent of all specimens of *Aedes* collected in the survey.

2. The seasonal prevalence of equine encephalomyelitis and of mosquitoes coincides.

3. There were more cases among horses and human beings in 1938 when mosquitoes were numerous than in 1939 when they were fewer in numbers.

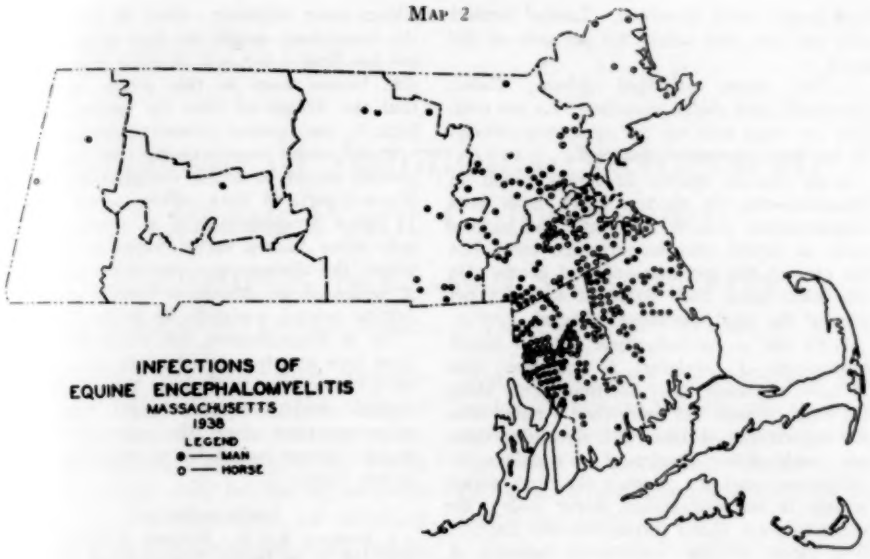
4. Human cases were most numerous in infants and young children who are less likely to protect themselves against bites by mosquitoes.

5. Horses pastured in the open, where vectors most usually bite, contracted the disease more frequently than those kept in stables.



GRAPH IV

MAP 2



AEDES VEXANS PROBABLE IMPORTANT VECTOR IN 1938

There is evidence that, if mosquitoes were responsible for the spread of the virus of equine encephalomyelitis in Massachusetts in 1938, the most important species was probably *A. vexans*. The points in favor of this are:

1. Only two of the known vectors—*A. vexans* and *A. triseriatus*—were found in all of the areas in which the disease was prevalent in 1938.

2. *A. vexans* were 5 to 15 times as numerous in the survey in 1939 as *A. triseriatus;* they were caught on man 40 times as frequently and in houses twice as frequently as *A. triseriatus,* and were the third most frequent species caught in barns and stables, whereas no specimens of *A. triseriatus* were captured in such buildings.

MOSQUITO CONTROL IN THE PAST

Beginning in 1930 and 1931, active measures to limit the numbers of salt marsh mosquitoes were instituted in the coastal region of the state. Since the vast majority of salt marsh mosquitoes are *Aedes,* this genus is most affected by such measures. As a result, regions which previously suffered annually from the scourge report that the vicious biting mosquitoes have been greatly reduced. It is very likely that, if the salt marsh *Aedes* vectors had not been greatly reduced by control measures, equine encephalomyelitis would have been much more prevalent along the coast in 1938.

Control of fresh water mosquitoes requires much more diversified methods than simple ditching, which is effective in tidal-swept marshes; and only in a limited number of urban communities have control measures been applied against these species. *A. vexans,* particularly, is an ubiquitous breeder, and control may be difficult if not impracticable. Because of the expense and difficulties, the control of fresh water mosquitoes is likely to be attempted on a large scale only if equine encephalomyelitis or some other mosquito-borne disease becomes prevalent.

SUMMARY

1. The objectives and results of a mosquito survey, carried out in connection with investigations on equine encephalomyelitis, are described.

2. Over 275,000 specimens, contained in almost 50,000 separate collections of adults

and larvae, were identified. Larvae formed 91.4 per cent, and adults 8.6 per cent of the total.

3. The three principal genera, *Culex*, *Anopheles*, and *Aedes* comprised 77.3 per cent, 11.9 per cent, and 6.6 per cent, respectively, of the total specimens collected.

4. Of the 21 species of *Aedes* found in Massachusetts, six species, which have been demonstrated able to transmit the eastern virus of equine encephalomyelitis, form 76.4 per cent of the specimens of that genus. On the other hand, they represent only 6.4 per cent of the total specimens collected.

5. Of the six vectors, three are salt marsh mosquitoes—*A. cantator*, *A. sollicitans*, and *A. taeniorhynchus;* they are found only along the coast, usually not more than 5 miles from the nearest salt water. The remaining three are fresh water species—*A. atropalpus*, *A. triseriatus*, and *A. vexans;* the first occurs mainly in the Connecticut River Valley, the other two are found throughout the state.

6. Three of the vectors—*A. vexans*, *A. cantator*, and *A. sollicitans*—comprise, respectively 25.1 per cent, 22.5 per cent, and 20.4 per cent of the total *Aedes*. The other three represent only 8.4 per cent of the total *Aedes*.

7. The peak of the prevalence of the vectors was reached late in August. They were, therefore, most prevalent just before the date of the peak of the 1938 outbreak of equine encephalomyelitis.

8. Vectors of equine encephalomyelitis seldom enter buildings. Over 60 per cent of the mosquitoes caught on man were vectors, but less than 6 per cent of those captured inside houses were in this group, indicating that the danger of bites by vectors is perhaps 10 times greater outdoors than indoors.

9. *A. vexans* was probably the most important vector of equine encephalomyelitis in Massachusetts in 1938. This species is 5 to 15 times as numerous as *A. triseriatus*, the only other known vector found in all areas where the disease was prevalent that year. *A. vexans* is an ubiquitous breeder and difficult to control, especially so in rural areas.

10. In Massachusetts, salt marsh mosquitoes have been greatly reduced in the last 10 years by active control measures. It is likely that equine encephalomyelitis might have been more prevalent along the coast if the salt marsh vectors had been as numerous as in earlier years.

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Relation of Ammonia-Nitrogen to Break-Point Chlorination*

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DESPITE the many rôles chlorination now plays in the field of sanitation and in industrial practices, always of primary interest to the public health worker will be its accomplishments in the treatment of drinking water since it provides the most nearly perfect means for preventing the spread of water-borne disease.

It should be interesting, then, to discuss some recently observed phenomena related to the behavior of chlorine when added to a drinking water supply.

For the past thirty years it has been considered satisfactory practice to apply relatively small quantities of chlorine (in the order of 0.05 to 1 p.p.m.) to the water to be disinfected, and to control the application by maintaining a slight residual chlorine content in the water after a reasonably short (generally 10 minutes) interval between the time of chlorine application and performance of the simple colorimetric test by which this residual is determined. It was thought then, that the indication of a residual chlorine content in the treated water after this short time interval showed satisfaction of the immediate chlorine demand, and that additional increments of applied chlorine would result in directly proportional increments in the measurable chlorine residual. In other words, were the observable data to be plotted graphically, the curve of residual chlorine content would parallel the curve of increasing chlorine application once the immediate chlorine demand had been satisfied.

Such a controlled method of drinking water chlorination has been correlated with bacteriological examinations often enough to indicate that this procedure was adequate for the purpose in the majority of cases.

There were, however, a number of instances where the chlorine demand was great enough to require the original application of much larger than normal amounts of chlorine, or where certain taste and odor causing substances were found to respond to increased chlorine application. To such higher rates of treatment the term "Super-Chlorination" has been applied.

In the light of the data which we propose to present here, it seems desirable that some descriptive nomenclature should be applied to the customary chlorine practice discussed above, and we suggest that the term "Marginal Chlorination" as being sufficiently adequate.

In some cases of super-chlorination it was found that increments of applied chlorine did not necessarily produce proportionate increments of chlorine residual. In some cases the chlorine residual increased slightly, and in others it disappeared entirely. This latter

* Read before the Laboratory Section of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 11, 1940.

phenomenon led to an extended series of laboratory and field experiments to determine just what would occur when these increasingly larger amounts of chlorine were added to normal drinking water supplies. The data plotted from a vast number of these experiments disclosed the now familiar "hump and dip" chlorine residual curve which, in its simplest form, revealed the chlorine residual rising in some relation to the increasing application of chlorine until, at a certain point, the chlorine residual curve takes an abrupt downward trend —in some cases approaching zero—from which point on, with further increments in the applied chlorine, it rises directly proportional to these applied chlorine increments, and does actually parallel the applied chlorine curve. It is to this point of lowest chlorine residual that the term "break-point" has been applied.

In practice, curves depicting these data will vary all the way from the very pronounced "hump and dip" curve (shown in Figure 1, Curve B) to the least pronounced curve (shown in Figure 1, Curve C). Occasionally the break-point of this latter type of curve may be somewhat difficult to find, although it will usually be revealed if the increments of chlorine application are sufficiently small and the work is carried on with sufficient care.

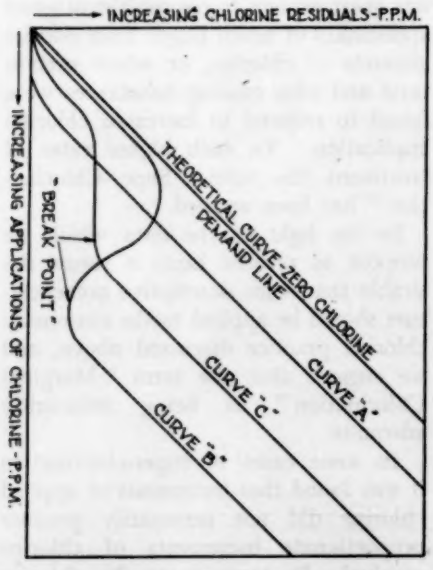

FIGURE 1—Typical chlorine residual curves obtained when water is treated with increasing amounts of chlorine.

From time to time certain aspects of this phenomenon and certain results were observed and commented on. One of the earliest notices was that of Sir Alexander Houston [1] who, in his report on the Metropolitan Water Board of London in 1925, discussed several experiments on super-chlorination for taste and odor control, concluding with the remark that the more chlorine added the more certain would be the absence of tastes and odors after dechlorination.

In 1926, Howard,[2] of Toronto, confronted with an acute taste and odor problem, paralleled the investigations of Sir Alexander Houston and arrived at the same conclusion, later transferring these laboratory conclusions to actual plant practice. In the course of this work, Howard noticed a certain relation between the amount of nitrogen present and the amount of chlorine necessary for the production of satisfactory results. The following year Hale [3] showed by tables that the chlorination of sewage effluents resulted in the loss of nitrogen. According to the figures presented, these losses indicated that the nitrogen combined with the chlorine in a ratio of 1:7.5, which led to the conclusion that the chlorine converted the ammonia to nitrogen and hydrochloric acid, according to the following equation:

$$3\ Cl_2 + 2\ NH_3 = 6\ HCl + N_2$$

Although in the intervening years attention was repeatedly drawn to the value of super-chlorination, the process failed to take hold, and was used but sparingly until 1939, when Faber,[4] and

Griffin[5] presented data indicating that practically all waters yield a break-point curve upon chlorination, and that success of the treatment revolved around this point. With interest thus aroused, Calvert,[6] early in 1940, showed the "break" to be a function of the ammonia-nitrogen (NH_3–N) present. Simultaneously, and independently, the authors had further observed that waters containing nitrogenous material, such as milk wastes or sewage effluents, yielded pronounced "break-point" curves, whereas waters deficient in these forms of pollution and substantially free of ammonia-nitrogen, seldom produced a typical "break-point" curve upon chlorination.

With these preliminary data as a background, a series of experiments were undertaken to study the effect of varying amounts of chlorine on waters containing 0.50 p.p.m. of ammonia-nitrogen in the absence of interfering substances and at varying pH values (pH 5.0, 6.0, 7.0, 8.0 and 9.0). All test samples were buffered at these varying pH values with suitable buffers as outlined by Clark.[7] In all cases, care was taken to add sufficient buffer to prevent any appreciable drop in the pH regardless of the amount of chlorine added. All pH determinations were made on a glass electrode. Temperatures were held constant and all tests were made in subdued light.

At the start of each test the distilled water, adjusted to the desired pH and containing 0.50 p.p.m. ammonia-nitrogen as ammonium chloride, was distributed into a series of gallon containers. These containers were then immersed in a running water bath at a temperature of 45°–48° F. Chlorine, as chlorine water, was then added to each bottle in the following concentrations: 0, 0.2, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0 and 11.0 p.p.m. Chlorine residual determinations were made on the various samples after 20 minute, 2 hour, and 24 hour retention periods. Ammonia-nitrogen determinations were made after the 2 hour and 24 hour chlorine retention periods.

In order to avoid all possible interferences, chlorine residuals were determined by the modified starch iodide method, wherein the addition of acid is omitted.

At the end of the specified time periods the excess chlorine, in 500 ml. portions, was neutralized with sulfurous acid, following which ammonia-nitrogen determinations were made. Sulfurous acid was chosen rather than sodium thiosulfate, due to the inability to obtain check results with the latter and in recognition of Raschig's[8] statement that mono-chloramines are reduced by sulfurous acid to ammonia-nitrogen, and the work of Dowell and Bray,[9] indicating that of the many reducing agents tried on nitrogen trichloride, only the sulfites reduced it quantitatively to ammonia-nitrogen (other reducing agents appearing to produce some nitrogen gas).

The pH of all samples was adjusted

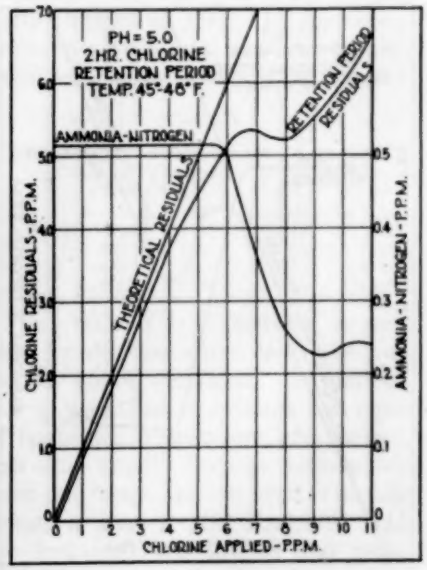

FIGURE 2

to 7.0–7.4 prior to distillation. Distillation was carried on at the rate prescribed in Standard Methods.[10] Using Nessler's reagent, ammonia determinations were made on an aliquot portion of each distillate, the developed color in the known distillate being compared with known standards.

The results obtained at the end of 2 hours' contact are shown in Figures 2, 3, 4, 5, and 6, representing chlorine and ammonia-nitrogen residuals at pH values of 5.0, 6.0, 7.0, 8.0 and 9.0.

At pH 5.0, Figure 2, the "break" in the chlorine residual was so ill-defined, that in practice it might have been passed over without serious consideration. That it was the true "break" is substantiated by the loss in ammonia-nitrogen residual as the chlorine applications were increased beyond 6.0 p.p.m.

The "break" in the residual curve increased considerably in magnitude when the pH was increased to 6.0. Under this latter condition the residual at the top of the "hump" dropped from 5.35 to 0.42, and the residual at the bottom of the "break" dropped from 5.2 to 3.22. Likewise, considerably more ammonia-nitrogen was removed than at pH 5.0 (see Figure 3).

As the pH was increased to 7.0 there were further losses in residual chlorine

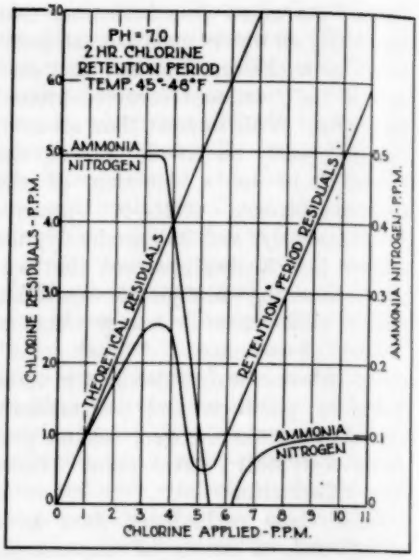

FIGURE 4

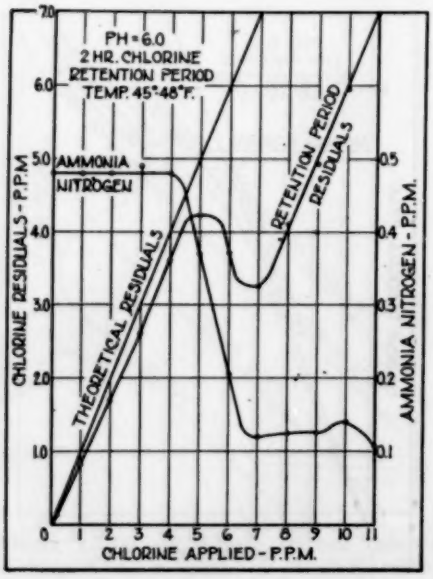

FIGURE 3

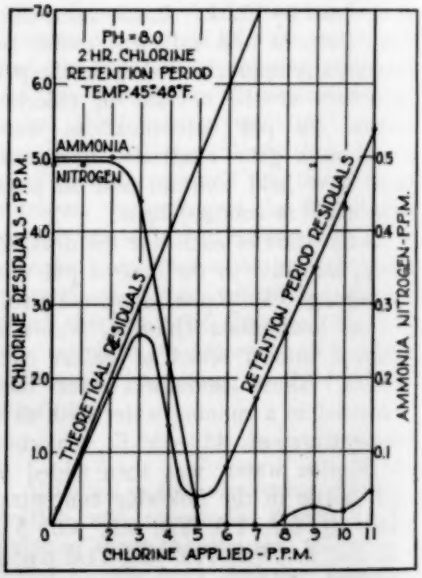

FIGURE 5

and ammonia-nitrogen with the latter disappearing entirely at the point where the chlorine residual had fallen to a minimum.

Further increases of the pH to 8.0 had little effect on the residual curve, although it did result in removal of considerably more ammonia-nitrogen than had been accomplished at any of the prior pH levels (Figure 5).

At pH 9.0 the ammonia-nitrogen residuals, instead of disappearing at the point of minimum chlorine residual, decreased in a smooth curve beginning at the point of maximum residual at the top of the "hump," and ending in no ammonia residual at the point where 11.0 p.p.m. chlorine had been applied. Under this condition of pH (9.0) the break-point curve, instead of approaching zero at the break, reversed its former trend, forming a break at a residual of 2.20 p.p.m.

These data led to the conclusion that under the conditions of this experiment the optimum pH for maximum development of the break-point curve lies between pH 7.0 and 8.0. Plant scale experience, however, indicates that this range may be increased to include pH values from 6.5 to 8.5.

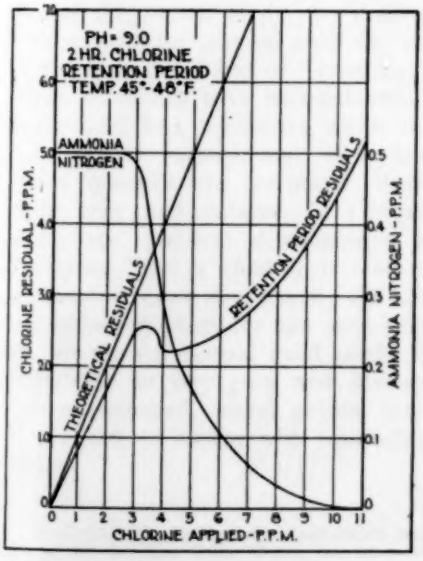

FIGURE 6

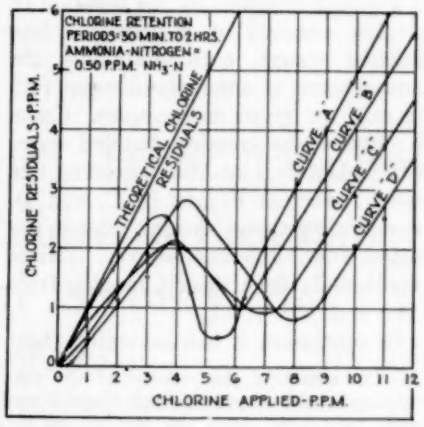

FIGURE 7

Chapin,[11, 12] and others, when working with relatively high concentrations of chloramines (1,000–2,000 p.p.m.) demonstrated the ratio of nitrogen to chlorine required completely to remove the ammonium ion to be on the order of 1:7.5. When, however, more dilute solutions were used (70 ± p.p.m.) this ratio changed to 1:8.5. In our experiment this ratio was found to be very close to 1:10 as evidenced by Table 1.

TABLE 1

pH	*P.P.M. N Consumed*	*P.P.M. Cl_2 Consumed*	*$N:Cl_2$ Ratio By Wt.*	*$N:Cl_2$ Ratio By Wt.*
	2 Hour Contact			
6.0	0.361	3.64	1:10.08	1:2.01
7.0	0.495	5.00	1:10.12	1:2.02
7.5	0.500	5.04	1:10.08	1:2.02
8.0	0.490	4.67	1: 9.54	1:1.91
Av.	0.461	4.59	1: 9.96	1:1.99

This ratio of 1:10, however, is good only for distilled water under the conditions above described. In practice, due to variations in amounts and types of impurities, temperature, and contact, this ratio usually deviates considerably from this figure, and the trend is usually toward a greater ratio. Ratios of 1:15 are frequently encountered and ratios of 1:25 are not unknown. The curves

in Figure 7 obtained by the addition of varying amounts of chlorine to four different waters, each containing the same amount of ammonia-nitrogen (0.5 p.p.m.), are given as examples. Curve A, obtained by treating distilled water with chlorine, reacts according to theory: whereas Curves B, C, and D, representing three natural waters obtained from different sources, deviate considerably from theory, ranging from 1:11 to 1:16.

In conclusion it can be stated that:

1. The extent of the removal of the ammonium ion by treatment with chlorine depends to a large degree on the pH of the solution.

2. The optimum pH for the removal of ammonium ions and reductions in chlorine under ideal conditions is in the neighborhood of 7.0 or 8.0.

3. In practice the optimum pH for break-point chlorination lies between pH 6.5 and 8.5.

4. The ratio of ammonia-nitrogen to chlorine to reach the break-point under ideal conditions is in the neighborhood of 1:10.

5. The ratio of ammonia-nitrogen to chlorine to reach the break-point in practice, tends to increase 1:10 toward 1:15 or beyond.

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Care of Children with Heart Disease in the Crippled Children's Program Under the Social Security Act*

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THE passage of the Social Security Act in 1935 gave recognition to public responsibility for the medical care of a group of the nation's growing citizens. For the first time a program for medical care was to be provided through grants-in-aid from the federal government to crippled children in the various states. The Children's Bureau of the U. S. Department of Labor, during the first 4 years of its administration of the portion of the Act dealing with services for crippled children, accepted state definitions of "crippling." These definitions have included orthopedic conditions, conditions which require plastic surgery, and, in a few states, operable eye conditions, rheumatic fever, and diabetes. In a broad sense, any physical disadvantage is "crippling" for a child if it renders achievement more than usually difficult and makes necessary for him more help or care than a normal child needs in order that he may grow and develop into a contented, useful citizen, able to complete in society with reasonable success.

THE CARDIAC CRIPPLE

Heart disease is one of many such crippling conditions. In 1939 the Children's Bureau set aside a portion of additional federal funds, made available by an amendment to the Social Security Act, for the purpose of developing state programs for children with heart disease and conditions leading to heart disease.

The inclusion of services for children with rheumatic fever and heart disease in the crippled children's program is a logical step in the expansion of medical care programs for children. There is no doubt that many children who suffer from rheumatic fever develop handicapping heart disease in the course of time. Rheumatic fever is a chronic recurrent disease that requires long and expensive medical and hospital care. This care is so costly that it may be a serious drain on the finances of fairly well-off families, and it is quite beyond the reach of families in the lower income groups, among which the disease has its highest incidence. In many communities, even were its members financially able to pay for them, medical services by physicians with the necessary experience with the disease and institutions equipped to care for these children are not at present available.

* Read before the Maternal and Child Health Section of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 11, 1940.

When, in addition, it is realized that heart disease in children is a problem of great magnitude, occurring, according to available estimates, in about 1 per cent of the school population of the cities in the northern states, it seems peculiarly appropriate that public money and public planning should be focused on a medical care program for children with rheumatic fever and heart disease.

It should be emphasized that the prevention and cure of rheumatic fever and heart disease in children cannot be guaranteed by present methods of medical treatment, any more than the prevention of infantile paralysis and the cure of its resulting deformities can be guaranteed.

This humble realization of medical inadequacies should not, however, prevent us from extending to these children the best medical care at present available, with the reasonable hope that permanent handicapping will thus be minimized.

BASIC PRINCIPLES

The basic principles in developing services for children with rheumatic fever and heart disease as a part of the crippled children's program are identical with those on which services for crippled children with other types of handicapping conditions have been developed during the past 5 years. In brief, a program for crippled children should provide all the services necessary for good and complete care to children in need of care.

In order to insure good care, the Children's Bureau has made recommendations concerning administration of the programs and minimal acceptable standards, not only for hospitals and other institutions to be used in these public programs, but also for the qualifications of professional personnel. These recommendations have in all cases been made on the advice of special advisory committees made up of experts in the various professional fields.

To be complete, care must include the full range of services itemized in the Social Security Act as "services for locating crippled children, and for providing medical, surgical, corrective, and other services and care, and facilities for diagnosis, hospitalization, and aftercare."

Funds for services for crippled children under the Social Security Act are made available to the states for extending and improving services, not for replacing services already being rendered by private or public agencies. They are to be used "especially in rural areas and in areas suffering from severe economic distress."

ORGANIZATION OF SERVICES

With these principles as a basis, how are services for children with heart disease to be organized? In meeting this problem, the state agencies have the advantage of 5 years of experience in the administration of services for children crippled with orthopedic and plastic conditions. Many of the technics developed in caring for these children are directly applicable to the care of children with rheumatic fever and heart disease. In some details, however, there must be modifications of the crippled children's program, modifications implicit in the nature of the disease condition. The nature of the disease and consequent problems of medical care will be discussed in full by Dr. Jones* later, and the reverberations of these problems in the medical-social field by Miss Cohen.* Suffice it to say at this time that rheumatic fever is a long-drawn-out, chronic, recurrent infection of childhood, which requires long continued, thoughtful, and costly care. The aim of treatment must be not only to

* See papers in this issue, pp. 813 and 819.

prevent or minimize, in so far as possible, damage to the heart, but also to prevent or minimize the serious inroads which a chronic invalidizing disease like this is apt to make into the child's emotional life, education, and social adjustments.

Not only because of the paucity of funds at present available, but also because of the new problems to be met in the care of children with rheumatic fever and heart disease, it has seemed wisest in the beginning to establish small, localized programs, serving limited areas. Iowa is the only state at present extending services to cardiac children which has not restricted its program to a limited area. It is believed that if a small number of children in a state are taken care of adequately and completely and their problems studied, it will be easier later to extend services to other centers elsewhere in the state. These programs must necessarily be located where facilities are available for adequate care during the acute and chronic phases of the disease; on the other hand, the state agencies have been discouraged from establishing centers to serve urban locations where abundant, excellent facilities for care are already available to the community.

In developing these programs, emphasis is to be placed on rheumatic fever, the principal condition leading to heart disease in childhood, rather than on heart disease itself. Since the problem of rheumatic fever is primarily a problem of infection in childhood, the programs are being directed and medical services rendered by pediatricians, aided in some states by cardiologists as consultants.

The services of well trained public health nurses and medical-social workers are to be provided.

CASE FINDING

The locating of children with rheumatic fever and heart disease in need of care will not be a difficult problem in the initial stages of the programs, since the funds available are too small to provide care for any large number of children. The usual sources for finding cases—private physicians, hospitals and clinics, public health nurses, welfare workers, and so forth—will be utilized in this program, as they are utilized in the program already developed for children crippled with orthopedic and plastic conditions. In a few states that are inaugurating cardiac programs, surveys, especially of school populations, are being contemplated for the joint purpose of finding cases and interesting the community in the problem; but for the most part the known need for services so far outstrips the extent of the funds available that no special case finding surveys seem to be needed. The high familial incidence of rheumatic fever and rheumatic heart disease calls for the examination of other members of the rheumatic child's family in any case finding program. Where rheumatic fever is a reportable disease, as in Michigan, Iowa, the District of Columbia, and the City of Chicago, another avenue for case finding is open.

Diagnostic services have a peculiar importance in these programs, for it is well known that many children are erroneously told that they have heart disease, on the basis of a cardiac murmur found in the course of a superficial physical examination. It is real therapy to remove the label of "heart disease" from a healthy child.

During the acute episode of rheumatic fever, hospital care is usually necessary. The state agencies have in general adopted the recommendations made by the Children's Bureau Advisory Committee on Services for Crippled Children with respect to standards to be met by hospitals used in this program, standards that include special provisions for the care of children, isolation facilities, and so forth.

CONVALESCENT CARE

During the long chronic phase of rheumatic fever it is advisable that children be cared for *outside* the "acute hospital"; The dangers of cross-infection to rheumatic children dictate this course, and the economic and psychologic disadvantages of a prolonged hospital stay are obvious. The problem of care during this stage is being met in different ways by the different states.

One solution is the use of the convalescent home if it can be staffed and equipped adequately to take care of children at bed rest. There are, however, very limited convalescent home facilities throughout the country. About one-half the states in 1930 had no beds for convalescent care at all. A method that is being tried out in a number of states is the use of selected foster homes, meeting acceptable child welfare standards, where children can be supervised regularly by physician and nurse.

I should like to emphasize that the problem of prolonged care for the chronically ill child has nowhere been sufficiently studied. Lack of facilities has forced the acceptance of inferior makeshifts, with a result that there has been a minimum of critical, thoughtful consideration of the way in which convalescent homes should meet the medical, educational, emotional, and social needs of children.

THE AFTER CARE PROBLEM

The care of the child who has recovered from an attack of rheumatic fever, regardless of the extent of heart damage incurred, is an extremely important part of the program. Eternal vigilance is needed to keep him in condition to resist further attacks of rheumatic fever, or, failing that, at least to detect the first early signs of reinfection in order to institute further care and rest. It has been recognized that if proper aftercare is to be given, provision must be made for the services of public health nurses and medical-social workers, for little can be gained if a child who has been well cared for in hospital and convalescent home returns to a home where parents, through lack of understanding, neglect his health needs; to a home where there is an obvious lack of sufficient food, shelter, or clothing; or to a home in which there is discord based upon emotional conflicts and prejudiced attitudes in relation to the handicapped child.

There are other elements in the care of children with rheumatic fever and heart disease which are not strictly part of a medical care program, but which must be worked out in coöperation with other agencies. For example, the child's education should not be neglected during his prolonged illness, else when he returns to school he will have lost his place in his part of society. Mental hygiene is necessary to combat the many emotional disturbances engendered by such factors as prolonged invalidism, prolonged separation from the family, fear of heart disease, and so forth. Vocational guidance may be necessary for a few of the older children with seriously damaged hearts.

The problems to be met in extending services to children with rheumatic fever and heart disease, as a part of state programs for crippled children, are very many and very difficult. A start has barely been made in 9 states,* and about an equal number of other states are making plans for cardiac programs in the near future. All of us who are working with these problems, whether in the Children's Bureau, state agency, or local community, hope to learn a great deal in the coming years about the care of children with rheumatic fever and heart disease.

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* California, Connecticut, the District of Columbia, Iowa, Maine, Oklahoma, Utah, Virginia, Washington.

NOTE: Since this article was written, two additional states—Maryland and New York—have begun providing services for children with rheumatic fever and heart disease.

Chronically Ill Cardiac Children in Institutions and Foster Homes*

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IN the past three years there has been a decided increase in the interest of the general public relative to the problem of the child with heart disease.[1] Programs have been instituted in various sections of the country accepting this disease as a public health problem. I would like, therefore, to discuss briefly a few of the pertinent considerations relative to various features of the care of these patients.

It might be well to reiterate the fact that rheumatic fever, which is responsible for the vast majority of heart disease in children, is a chronic disease with various exacerbations and recurrences or recrudescences. The disease varies in severity from a severe acute and even fatal attack to one of a very mild or low-grade nature. Rheumatic heart disease has been observed to develop when rheumatic fever was a very mild illness. By such a mild degree of rheumatic fever I mean subclinical disease or rheumatic fever, the activity of which is indicated only by laboratory tests. Of primary importance in the care of these rheumatic fever patients, as most observers agree, is a seemingly close relationship between infection of the upper respiratory tract and recurrences of the disease. The upper respiratory tract infections, often associated with recurrences of the disease in the northern part of the United States, usually have a coexistent infection with the hemolytic streptococcus. The rôle played by the hemolytic streptococcus is the subject of much controversy at the present time, and despite one's ideas concerning etiology, it seems probable that many types of this organism may play an important part in the natural history of the disease. While other events such as operative procedures, accidents, extraction of teeth, and non-streptococcal illnesses seemingly precipitate recurrences of the disease, they do not represent a group of statistical importance, since infection of the upper respiratory tract is by far the more common occurrence in any of these population samples. Patients with rheumatic fever and heart disease seem peculiarly susceptible to infections of the upper respiratory tract, although no data have been presented which indicate that they are more susceptible than many other members of the community in which they live.

Since no specific therapeutic measures are available for the treatment of rheumatic fever, we may assume that the majority of students of the disease believe in rest as an important feature of the care of these patients, once the

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* Read before the Maternal and Child Health Section of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 11, 1940.

acute stage has subsided. This brings up important features relative to the programs for the care of rheumatic fever subjects. If one accepts the advisability of bed rest so long as rheumatic fever remains active, he must carry this through consistently until the nonspecific laboratory tests have returned to normal. It is essential that this be accepted, since during periods of even mild rheumatic fever, these patients are susceptible to developing an increase in the severity of their disease, and indeed it is during such periods that severe, even fatal, rheumatic fever often develops.

The problem hence becomes one in which several different types of care are important. One must be aware that it is very advisable that there be consistent medical thought and consideration during the various phases of the disease. It is likely that the program for the care of rheumatic fever patients has been long held up because of general lack of acceptance by the medical profession that these patients need further supervision and care once they are sufficiently well to leave the wards of the general hospital. Too readily have visiting physicians in general hospitals been anxious to dismiss medical responsibility upon discharge of the patient from the ward. No physician knows rheumatic fever well who has not observed these patients in all stages of the disease. Continuous medical observation and supervision are necessary. The patient needs the same medical consideration in the acute hospital, chronic institutions, and convalescent or foster homes. It further may be agreed that comparable nursing supervision and competent medical social work are necessary throughout the course of the disease.

It may be well to discuss the types of institutions and types of care which offer particular advantages to patients at various stages of rheumatic fever. It has not been unusual to find institutions caring for these patients, unaware of the service they are best qualified to give.

CARE FOR THE ACUTELY ILL PATIENT

Since rheumatic fever is largely a disease of relatively low economic levels, it must be assumed that it would be difficult for the family to finance care in the home for a protracted, severe illness. At times, such patients may remain acutely ill for several months, requiring almost constant medical and nursing supervision. Especially is this true of those patients who develop congestive heart failure, and this may persist for periods of several months. One need not argue that such a condition could not be properly cared for in the home, but it will be found the general rule that during acute illness most patients with this degree of rheumatic fever are best cared for in hospitals. Up to the present time, it is only at this stage of the disease that varied types of medication are of great help to the patient.

There is one decided difficulty concerning the care of these patients in the wards of general hospitals. Here they are exposed freely to varied types of infection present in the community. It is advisable that as soon as the patient has recovered sufficiently, he be moved to an atmosphere where he is exposed less frequently to infection, especially of the respiratory tract. There are several ways in which patients may be cared for at this stage of the disease.

CARE FOR PATIENTS WITH CHRONIC RHEUMATIC FEVER

A number of rheumatic fever patients having severe forms of the disease of a more or less progressive nature must remain in the wards of the general hospital for indefinite periods of time. A few institutions have been developed, less expensive than the general hospital,

where protracted bed care with excellent medical and nursing supervision can be obtained. In many instances such institutions are not available. It is obvious that they cannot be far removed from the center of population which they serve, since these patients are notoriously subject to an increase in the severity of their disease with slight provocation. These patients should be protected as much as possible from intercurrent infections and require exceedingly careful medical and nursing supervision. An institution giving the type of care comparable to that given infirmary patients in sanatoria would be satisfactory. But again it must be repeated that it is not advisable to consider transporting these patients any great distance from their homes since, with increase in the severity of the illness and a possibly poor outlook, it would be inadvisable to have the patient so far away from their families as to prevent frequent visits.

Mild or low-grade chronic rheumatic fever—At this stage of rheumatic fever there may be mild clinical symptoms of the disease or merely laboratory evidence of rheumatic fever. They still remain susceptible to increases in the severity of their disease, and their outcome is often influenced by intercurrent respiratory infections. It is at this stage of the disease that many convalescent homes throughout the country have taken patients only to find that they cannot give them adequate medical and nursing care, or protracted bed care. Institutions taking such patients must be able to give them bed care and protect them if possible from respiratory infection. In some instances these patients have been cared for by the use of chronic hospitals where the patients are in small groups, and more recently sanatoria have been utilized for this purpose. A most successful two year experiment has recently been conducted in Boston at the Sharon Sanatorium by Drs. John P. Hubbard and W. A. Griffin.[2] In this experience a small number of patients (20 each year) have been cared for in the same open air pavilion in which children with tuberculosis were formerly treated. This allowed for dilution factors as far as air-borne infection was concerned. There was a striking improvement of these patients in such an environment, and no rheumatic fever recurrences. This experiment, which now extends over two years, has been satisfactory and will shortly appear in the literature. It offers a good many advantages, but also has disadvantages, such as the necessity of distance from the local center of population which it serves, the difficulty of medical supervision, and the fact that should an epidemic occur in this group it would result in serious problems and an exodus back to the general hospital. In addition, it is too early to predict a constant satisfactory result as annual variations in the disease are well known. It would seem that the use of sanatoria located an appreciable distance from the community served would present tremendous difficulties. Any institution caring for patients of this type cannot consider itself purely convalescent, since the period of stay and bed care during active rheumatic fever has been found to be usually 6 months and in many instances two or three years. Bed care for this protracted period of time offers many differences from ordinary convalescence.

It has seemed probable that foster homes in which there were a very limited number of children might serve a useful purpose of caring for bed patients with mildly active rheumatic fever. In fact, this has been satisfactorily carried out in some cities. This type of care can be developed in most communities. Intelligent foster mothers, frequent nursing supervision, and at least weekly visits by the physician are

necessary. A small number of children in each home is advisable. It offers the distinct advantage of small groups and hence curtails the probability of exposure to respiratory infection. It is needless to state that such foster homes could care for patients at only one stage of the disease since it would be a difficult psychological problem to have some children in the home having a fair degree of physical activity while others are restricted and kept in bed. It is also obvious that there should be a close affiliation between the medical, nursing, and medical-social services of the foster home, and these services offered the same child at a different stage of his disease.

CARE DURING INACTIVE RHEUMATIC FEVER

When rheumatic fever becomes inactive, it is safe to begin a schedule of slowly increasing physical activity. After freedom from active rheumatic fever for some time, we have found it advisable to restrict physical activity only in those patients with reasonably severe, permanent heart damage. It is surprising how many children with mild to moderate rheumatic heart disease are able to lead active physical lives. At this stage in the course of the disease there is a choice of one of several opportunities which may be offered to the patient.

The use of convalescent homes—The convalescent home in which children may be cared for in small groups, hence decreasing exposure to infection, offers the patient an opportunity to return to a physically active life under supervision. Such homes form a valuable adjunct in the care of the patient. In many communities such convalescent homes are not available and one has to rely on the use of foster homes. It must be remembered that the location of the home, and the usual medical and nursing service available, do not equip the average convalescent home to care for patients with active rheumatic fever.

The use of foster homes — Foster homes in which there are only a small number of children, preferably not more than two or three, serve quite satisfactorily in this regard. The Speedwell Society of New York has conducted an admirable foster home type of care and has demonstrated its worth during the inactive stage of the disease.

The use of the patient's own home—Concerning convalescence in the patient's own home there are many features to be considered. Again the type of care which is available depends on the intelligence of the parents, the economic level of the family, and the number of siblings. We have found that with a large number of small children in the family and consequent crowding, there is a distinct increase in the exposure of the patient to whatever infections are existent in the community. If there are not too many young children in the family and the patient can obtain good parental supervision, with an adequate diet, have at least a bed of his own if not a room alone, much can be accomplished in his own home. Here one really comes in contact with the medical-social aspects of the disease, and an exceedingly important problem relative to the individual factors which will help the patient through his long illness and maintain his psychological equilibrium and a proper attitude to his difficulty. Many of the important considerations concerning the decision to care for the patient in his own home cannot be elaborated here.

GENERAL PRINCIPLES

It would be remiss to end this brief discussion without stating that the organization of rheumatic fever and rheumatic heart disease programs will vary greatly in different communities. Existing institutions and agencies should be utilized whenever they exist. However,

there are general considerations which may be briefly enumerated.

1. There must be provision for adequate medical and nursing care during the acute illness.
2. In many instances this same type of care must be available for months or even a year or more.
3. Bed care during even mildly active rheumatic fever is generally agreed upon as advisable and beneficial.
4. Gradual return to an active life, dependent upon the amount of permanent heart damage, is advisable.
5. Consistent medical, nursing, and medical-social observation and care should be available throughout the various stages of the illness.
6. Protection from respiratory infection should be carefully considered throughout the program.
7. Aftercare or follow-up during the inactive phase of the disease is of primary importance, especially from the medical and medical-social aspects.
8. An attempt must be made to keep the patient up to his regular scholastic level. This is relatively easy in institutions, but necessitates regular home instruction at some part of most programs. Special cardiac classes are in general to be avoided if possible.
9. Occupational therapy or handicraft work is a valuable aid in keeping the patient contented and aids recovery.
10. Vocational guidance and training are necessary for the comparatively small group of patients who reach adolescence with moderate to severe rheumatic heart disease. The majority of patients reaching this age are able to lead active physical lives.

It would be remiss also not to mention the family as a unit since much attention has been paid in recent years to the fact that there is just as high an incidence of multiple cases of rheumatic fever in a family as is found in tuberculosis. There have been recent convincing studies concerning hereditary factors playing an important rôle in the disease, and in general there is an indication that there may be a hereditary susceptibility. This does not rule out the factor of environment or contagion, and we do not know to what extent removal of a source of infection from the family will do so far as curtailing exposure of other members of the family. This is an important feature for future observation along with a study of the effect of better housing conditions.

Institutionalization of these patients can rarely be avoided, no matter how desirous one is of caring for them in their own home. We must therefore face the question of the psychology of the patient and what may be done in order to prevent him from becoming a psychological cripple. It has been my general experience and that of a number of others, that those patients are psychologically better who are cared for along with a group of similar patients, than if they receive a tremendous amount of attention in their own homes. In groups they can be better educated concerning the problem which their disease presents, and may face the problem in a more rational way. They may also be given simple occupational handicrafts more easily, and these serve well as substitutes and help in keeping the patient happy. While this feature is beyond the scope of this presentation, we must remember that it is essential to aid the patient to accept the situation rationally, and thus prevent psychological and emotional difficulties.

THE PROBLEM OF CONCURRENT RESPIRATORY INFECTION

Despite the obvious variations available in determining a given community program for the care of rheumatic fever and rheumatic heart disease patients, there is one rather inescapable feature which we must face. It would be wise for us to realize and accept this early in the development of public health programs. Patients with rheumatic fever and rheumatic heart disease do not tolerate respiratory infection well. Pharyngitis or tonsillitis and colds with secondary hemolytic streptococcus infection are especially deleterious to these patients. They have profoundly

affected the natural history of rheumatic fever in our group of patients. In our experience [3] one-half of the patients with mild or recent rheumatic fever, having hemolytic streptococcus pharyngitis or tonsillitis, have a recurrence of or increase in the severity of rheumatic fever. This occurs in about one-third of those patients having simple coryza. We do not yet know how or why the hemolytic streptococcus or respiratory infection plays so important a part. More recently we have become aware of a further distressing feature.[4] In carefully studying the throat flora of these patients, we have frequently noted a change to a predominantly positive culture of a virulent type of hemolytic streptococcus two to three days before any clinical respiratory infection, if indeed any ever develops. Thus, these organisms may be easily spread from one patient to the other, if we rely upon ordinary clinical symptoms before instituting isolation precautions. Further, patients presenting these cultural changes, but no clinical respiratory infection, may have a recurrence of rheumatic fever. In a broad clinical and bacteriological experience during the past year, no recurrence of rheumatic fever or increase in the severity of rheumatic fever was seen which was not preceded by a hemolytic streptococcus respiratory infection or a distinct cultural change in the throat flora.

This is the most difficult feature of any program. If we do not accept it, we may cause great delay in the sane development of public health programs. It is obvious that small units are advisable, and that exposure to respiratory infection must be minimized. This raises the question of the part played in preventing the spread of air-borne infections by such methods as adequate ventilation and perhaps irradiation of air by ultra-violet mercury vapor lamps. These methods, still in the experimental stage, may offer much to curtail those factors which seem to play a part in the recurrence of rheumatic fever in patients, especially when low-grade or recent rheumatic fever has existed. Wherever practical it is suggested that in assembling groups of rheumatic fever patients, bacteriological work of a high order be made available so that epidemics may be carefully controlled and hence deleterious effects on the course of rheumatic fever obviated. It is true that the patient's home is often an excellent place for exposure to infection, but in removing the patient from his usual habitat, we must try to place him in an atmosphere which will at least decrease as much as possible the exposure to factors which may result in an increase in his disease or a recurrence of it once the disease has subsided to the inactive level. Should this ultimately be possible, we will doubtless save many lives and substantially lessen the amount of permanent heart damage in others.

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Medical-Social Problems of Rheumatic Children*

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RHEUMATIC disease, a long continued infection, is a potential source of medical-social problem for all children who become infected by it. The course of the disease and the very nature of regimen for care interfere with the child's usual activities. A disease of childhood, it most frequently occurs in the early formative years and during adolescence, when children normally experience their greatest problems in physical and psychic development.

The high incidence of rheumatic fever in the lower economic groups indicates that poor housing, overcrowding, exposure to infections, and inadequate nutrition are important etiological factors.

Problems for rheumatic children may result from the following:

1. Social factors leading to the development of the illness
2. Deficiencies in community organization that deprive children of medical, auxiliary health, and other services
3. Personal or environmental difficulties that obstruct treatment and care or prevent the maximum possible reduction of disability and rehabilitation

Therefore, this paper will consider medical-social interrelationships in two phases, the patient's personal problems and community organization.

PROBLEMS ASSOCIATED WITH MEDICAL CARE

The first essential need of a child with rheumatic fever is continuous medical care of good quality. Under some conditions, however, either of personal circumstances or of community organization, this may be completely beyond the child's reach.

For example, a public assistance worker in a western state found a sick child in the home of a client. Her subsequent study of the case revealed that the child, seriously ill with rheumatic fever, had been denied medical care because her mother was convinced no doctor in the state was qualified to treat her. The mother, a layman, was treating the child on the advice of a practical nurse, her friend, who had been caring for another patient with what seemed to be a similar illness. Mother and friend were carrying out their own ideas of treatment, while the child's condition was growing progressively worse.

Another child in the same state, a member of a more intelligent family, had been discharged from a university hospital following a period of treatment for rheumatic heart disease. The hospital, about 200 miles from the home, was the nearest one available. During the 4 years after her discharge, the child had repeated and increasingly severe exacerbations of illness, with no

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medical attention. The community in which the child lived had no facilities for medical care. The family had no means of getting her back to the hospital, which, like many others, had no contact with patients following their discharge.

This lack of medical and hospital facilities in rural areas means that children are deprived of even the most rudimentary care. Few state agencies had assumed any official organized responsibility for children with rheumatic fever until this year when grants from the Social Security funds through the U. S. Children's Bureau stimulated the development of programs. These, however, will at the outset be limited in scope, and there will still remain in many urban and rural areas of the country large numbers of children without the opportunity even for medical examination.

Often the existing hospitals and clinics are located at centers remote from large sections of the state, and children are deprived of care unless provision is made for their transportation. Too little attention has been given to the subject of transportation facilities. Some large counties have neither railroad nor bus lines. Occasionally, neighbors or relatives may be able and willing to spend long hours on the road and in waiting for the patient's examination, but such resources and such generosity are not generally available. Rural education made real progress after the establishment of consolidated schools, but their present state of development could hardly have been attained without provision for pupil transportation. With similar planning, clinic and hospital care could be brought within the reach of thousands of medically neglected children.

CARE FOR THE CONVALESCENT

Medical care for many rheumatic children extends beyond the general hospital, often for long periods of time, and requires complete bed rest. For many patients this may be carried out at home, but large numbers of children lack the type of homes where physical and mental rest is possible. Institutions or foster homes of accepted standards, according to the individual child's need, can be good substitutes. However, these resources are even more lacking in most communities than are hospital facilities. Hospital treatment of patients with rheumatic fever insufficiently supplemented by a good quality of aftercare is wasteful. Early recurrence and hospital readmission usually result.

Consideration for the sick child, and not alone for the disease, implies a concern for the promotion of his normal development as a useful member of society. The principal elements are opportunities for play, education, work, group life, and a sense of emotional security. The possibility of the patient's participating in any activities during the acute stage of his illness cannot be discussed here. However, during the chronic and convalescent phases of the illness, provision can be made for schooling, for recreation, and for occupational therapy, wherever the child may be—in his own home, in a foster home, or in an institution for convalescent or chronic patients. The public school systems of many communities supply visiting teachers for home-bound sick children. Many institutions caring for chronic patients have regular classroom instruction enabling children to maintain their place in school. Occupational therapy, as recreation, as therapy, and as a stimulant to creative work, has been effectively established in institutions and in the homes of patients by associations of both professional workers and laymen.

A recent visit to a convalescent home demonstrated how ingenuity, resourcefulness, and interest can create fine recreation for disabled children. A

pageant of medieval life with costumes and decorations was being rehearsed. The patients had painted the decorations and made the costumes. Beds and wheelchairs had been brought into the recreation room. Many children participated as actors, reciting their lines from wheelchair or bed. Each patient had some rôle well within his capacity. One boy was so disabled that he could do no more than control a little electric light switch from his bed. The atmosphere of the place was not one of illness or invalidism. Instead, one felt the gaiety, the child's natural love of play-acting, and the wholesome expression of responsibility and participation in group activity.

REHABILITATION

On the subject of school attendance after return to community life there are different points of view. Some favor special classes or special schools for children with heart disease, as a means of giving them protection through supervision by teachers who understand their disability and their limitations. Unless the system provides for physical examinations at reasonable intervals by doctors trained for this work, followed up by recommendations and by change in the child's activity as needed, the maintenance of special classes and schools would seem to be of little value except that they eliminate competition with well children. Attendance at the usual community schools is advocated by some who fear the disadvantages of segregation. Explanation to the appropriate school personnel of the child's condition and physical limitations has often resulted in adjustments compatible with his needs. Certainly, in every community the professional personnel engaged in the care of children with rheumatic fever have a duty to work with the boards of education for the establishment of suitable school facilities.

Education both precedes and is part of preparation for vocational life. For many of these children the potential threat of recurrent and progressive illness emphasizes the importance of their engaging in vocations which will neither lead to blind alleys nor contribute to physical breakdown, but will maintain them through adult life in satisfying and useful work. This requires skilled guidance and placement service as an integral part of community organization.

Competitive industrial life even under ideal conditions will be physically impossible for some children. However, many of these can function successfully within their limitations on specially designed projects, where their useful work can be adequately compensated. The personal transformation observed in several young adults after placement on a WPA project for the handicapped has been eloquent testimony to the constructive possibilities of special workshops.

A discussion of medical social elements in the community aspects of rheumatic disease comes to a natural climax on the subject of bad housing, which, as a component of poverty, is perhaps the most important point of all. Sunless, damp, unsanitary, crowded homes are breeding places of rheumatic disease. Insufficient food and improper diet foster its development. Thousands of children exist in families subsisting on marginal incomes or on financial aid below minimum budgetary requirements. Many live in areas in which they can obtain no public financial assistance. The impetus given by federal housing activities must be accelerated and employment opportunities need further stimulation. It has even been said that "rheumatic heart disease would largely disappear if decent housing and wages became the order of the day."[1]

To the usual unpredictables of life, there is added for the child with rheu-

matic fever the unknown factor of the course of his particular rheumatic infection. His opportunities for attaining the average span of life are dependent upon many things.

EMOTIONAL PROBLEMS

Do the parents really care about this child and wish to help him? Can he feel himself secure in his home, or is he made to feel himself a nuisance? Has an overburdened mother, weary of the exacting demands of a child in pain, or bored by inactivity, become too severe in discipline or given it up altogether in despair? Does fear of sudden death obsess the patient or family? Will overanxiety create invalidism, or will indifference result in insufficient supervision? Are essential basic needs met, and diversion and companionship available as well? Is there jealousy among sisters and brothers because of increased attention to the patient? Is there rivalry between the patient and his healthy younger brothers and sisters who are able to carry on the patient's favorite sport or activity no longer possible for him? Is the atmosphere harmonious enough to promote long-time rest and relaxation? Is the child constantly excited and upset by over-exuberant spirits in the household? Is there intelligence enough to carry out medical directions? Does the family possess the necessary self-discipline to part with the child for many months, or perhaps for several years of care away from home?

Neither academic nor hypothetical, these questions arise from considerable experience with clinic and hospital patients. The emotional reactions implicit in these questions are among medical-social problems which must be anticipated or dealt with as they arise to obstruct the care of rheumatic children. In addition to these reactions which center largely about interpersonal relationships within the home, there may be adverse emotional reactions in relation to play, school, work, and other activities. A child may make capital of even a slight cardiac murmur as an advantage over playmates, or as a means of being excused from the school activities he dislikes. To retain his place among schoolmates he may indulge in excessive activity. Prolonged or repeated absences from school may retard a child several years. Nothing is more disturbing to some children than to be left behind their own age groups in school. Under such circumstances, children often lose interest, regress mentally, do poor work, or leave school entirely. Yet without elementary education the opportunities for work other than unskilled labor are exceedingly limited.

In work, adolescents often need encouragement from understanding employers who will give them opportunity to develop. The practice in some industries of excluding persons with heart disease from activities which they are quite capable of carrying on, will be gradually eliminated, it is hoped, by further education of the public.

THE COMMUNITY AT WORK

This exposition of medical-social problems of children with rheumatic fever may seem to present a discouraging and rather hopeless picture of the situation. Quite the contrary is the fact. Experience has led practically all authorities to believe that the progress of the disease may frequently be retarded, the incidence of recurrence lessened, and disabilities minimized by adequate solution of the medical and social problems involved.

When the diagnosis of rheumatic infection or rheumatic heart disease in a child has been made in a clinic or hospital, the medical and social elements in each case should be studied simultaneously, to ascertain any potential difficulties which may create problems or obstruct treatment. Throughout

the period of treatment and convalescence there must be a conscious awareness of the continuous interplay of medical and social elements. Many children will have resources within their own personalities or within their families to carry along the whole burden of illness; but many others will be lacking in some or even perhaps all of the necessary constituents of care. In clinic or hospital there should be available to contribute to programs of care, as outlined, trained medical social workers who have a comprehensive knowledge and understanding of the individual child, his family, and his social environment. Their training prepares them to understand the meaning of illness, the interrelated social problems of illness; develops skills to serve the patients in collaboration with the physician; and to function as representatives of the hospital in relation to other agencies in the community. Too many hospitals have no qualified medical social workers, and too many local communities lack other social case workers who can effectively assist patient and families to make the required home and other adjustments. The expansion of community organization as suggested at the beginning of this paper must be accompanied by an increase in the number of well qualified trained personnel in the various professions—medical, nursing, dietetic, and social service—each carrying out the special function of his own particular field, but always in coordination with all the others.

By reducing the unmet needs in community organization, and by a fuller realization of the individual personal and family difficulties in relation to rheumatic disease, some real progress, it is hoped, can be made toward the solution of this serious problem.

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Centralized Collection of Marriage and Divorce Records and Their Uses*

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MARRIAGE and divorce, and the problems of collecting the records of their occurrence, may seem rather outside of the interests of public health. But public health must be concerned with marriage, both as an event which marks the beginning of a new family and as the designation of a pattern of living.

Public health is directly interested in all the circumstances which affect the well-being of an individual throughout his life. His physical and mental health, his personal and social adjustments, his adequate functioning as a citizen and parent, are all involved in his well-being. Present-day medicine recognizes that none of these factors can be neglected in appraising an individual's health, and that the changing social and personal relationships he encounters at every stage of life are significant in determining his general fitness.

Marriage is so universal and natural an undertaking that its far-reaching consequences for public health are often lost sight of. From every point of view marriage is an important event, for the person who marries, for society, and for public health. With marriage, the individual's social status changes and a new family is created. His effective reproductive life usually begins at this point and he enters into a new world of personal and social responsibilities. The health officer cannot avoid the public health implications of marriage, and he does not now, as a matter of fact, seek to avoid them entirely. In a number of states it is required that the person who marries should be free of syphilis, and in a few states the prospective bride and groom must also be free of epilepsy, tuberculosis, and insanity. One state adds alcoholism, drug addiction, and feeblemindedness to the list of things which are officially recognized as making a man or woman unfit for marriage.

Public health, furthermore, is intimately concerned with the family, not only from the point of view of physical health, of the contact spread of infections or the parents' coöperation in immunization of children, but also from the point of view of the family's social and biological stability. Today a considerable amount of investigation deals with family size and composition, parent-child and other family relationships, and the social-economic characteristics of families rather than individuals. New departures in statistical and epidemiological analysis are resulting from the increasing necessity of dealing with the family as a population unit.

Since marriage is so important an event in the social and biological history of the population, its record is, *ipso facto*, a part of vital statistics. A divorce

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record, marking the termination of a marriage, is also for the same reason a part of vital statistics. Complete and accurate marriage and divorce records should accordingly be available in every state vital statistics office, and they should be in the custody of the vital statistics registrar. The reasons for this are numerous and varied.

An official record of a marriage or a divorce may be needed at some time by every individual. The large number of urgent inquiries we receive in the Census Bureau from persons trying to trace marriage or divorce records is a convincing demonstration of this need. And the frequency with which our serious efforts to help fail because the person does not know or cannot remember where the county or other local record is filed, is sufficient proof that a centralized file in each state is essential for filling the need. This experience is duplicated in probably every state vital statistics bureau.

An acceptable proof of marriage or of divorce is needed more today than ever before. Such proof has always been required in relation to questions of legitimacy and parentage, and in insurance claims and the settlement of estates, but now the social security program, public relief, workmen's compensation, and at this moment, conscription, may all demand at some stage in their operation proofs of marriage or of its termination.

From the point of view of the state, the individual's marriage or divorce record has not only the primary value of defining his family relationship, but also the equally important function of evaluating him as one element in the population for the purpose of investigating a number of basic problems. The state needs to know in some detail how its population is growing. Adequate study of fertility requires knowledge of the ages at which males and females marry and the proportions of their respective age groups which the marrying persons of both sexes represent.

The age at marriage depends upon a number of factors. It is determined by cultural traditions, which vary with racial or ethnic groups, with differences in climate, and with urban and rural modes of living. It depends also on economic circumstances and varies widely among social classes. Fertility, on the other hand, may vary with these factors independently of age at marriage, a circumstance which can be studied only when knowledge of age at marriage, in relation to these factors, permits the age factor to be held constant.

The changes that are known to be taking place in the composition of our population and the large effects these changes are likely to have on the nation's future economic and social development, make the relations of marriage statistics to these problems worth first consideration. But their use is not confined to these matters. The study of marriage as a basic economic and social factor receives, or should receive, the attention of a number of different groups and interests, among them certain governmental agencies, industrial and commercial organizations, religious bodies, social welfare agencies, and the courts. In market studies by governmental and industrial analysts, housing needs, commodity consumption, and agricultural and industrial production are measured by and related to family units. The church is concerned with initiating and maintaining the stable family as the fundamental unit in the social structure. Welfare agencies handle most or all of their problems on a family basis. Certain kinds of courts are concerned with the evasion of marital and family responsibilities or with the termination of marriage.

To all these interests the present and future trends in marriage and divorce rates, particularly in regard to their

economic, social, and racial or other ethnic relationships, are of primary importance. Such lack of interest as may exist at present is due largely to the absence of the necessary data by which these trends may be measured.

Today we do not know how many marriages and divorces occur in the United States each year. The only nation-wide marriage and divorce statistics that have been tabulated are the number of marriages per year, and in a few limited details the number of divorces per year, by state and county, from 1867 to 1932. Even during this period of only 66 years, two intervals totaling 14 years are covered only by estimates. Since 1932 no official marriage or divorce statistics of any kind have been collected or tabulated for areas larger than states, and the only figures we have to represent this recent period are estimates of total numbers of marriages and divorces in the United States from 1933 to 1937.

The principal reason why these statistics have been so badly neglected is probably the fact that for a large part of the country records of marriages and divorces are not readily accessible. Although the situation has been slowly improving during the past few decades, there are in the United States many hundreds of separate dissimilar systems of filing marriage and divorce records.

A few details are worth stating: 20 states do not collect marriage records centrally, and 32 states are without a central reporting system for divorces. In these states the records are to be found only in county or other local offices, and often under antiquated and inadequate systems of recording, filing, and indexing. For these states marriage records are scattered in nearly 1,600 separate independent and unrelated files, and divorce records in about 2,100. Individual records in these files are usually not traceable unless both the state and county in which the marriage occurred or the divorce decree was granted are known.

Of the 28 states in which records of marriages are received in a central state office, in only 10 are the original certificates filed. In the remaining 18, complete or partial copies of these certificates are returned to state offices. Among the whole group of 28 states the types of records vary greatly in the amount of useful data they contain.

From the purely practical point of view it is the difficulty of collecting non-centralized records which presents the largest problem in gathering the marriage and divorce statistics of the country. Lack of uniformity in state marriage and divorce laws, a frequent disregard of the requirements for good registration, and diversity in the form and content of records also contribute to the problem; but the biggest factor is the absence in many states of centralized collection of records. Establishment of this is difficult, usually requiring action by the state legislature, but once the system is set up it is possible to do something about improving the method of registration and the type of record.

As regards registration, the term should properly denote a system whereby original certificates or other original records are deposited in permanent archives. Under existing conditions, such a system, where it does not now exist, can be more readily instituted for marriages than for divorces. The filing of marriage certificates, though not often centralized, is a more or less established practice, whereas, the filing of divorce certificates seems not to be a practice at all. By a divorce certificate, I mean not the decree but a separate official record which contains, in addition to such facts as cause, type, and date of the divorce, the personal particulars necessary for adequate demographic identification of the parties. Such a certificate should be filed, and prefer-

ably prepared, independently of the usual court record.

The demand for national marriage and divorce statistics has been widespread and insistent for a number of years. The Bureau of the Census has sought to resume this work since its discontinuance in 1933. The opportunity to reinvestigate the nation's marriages and divorces has come in connection with the Sixteenth Decennial Census. The work has properly been made a part of the activities of the Division of Vital Statistics, where it is being developed with a view to making it a permanent continuing function, supplementing the division's work in birth and death statistics.

The aim of the bureau is to set up marriage and divorce registration areas. By this procedure the fact that the collection is not nation-wide is, under present conditions, an advantage rather than a handicap. The reasons for this point of view are found in the history of the collection of birth and death statistics. The birth and death registration areas were small at first, but grew steadily, and after a time comparatively good birth and death data were being obtained from the whole country. One of the principal reasons for this success was the fact that the birth and death registration areas were defined according to certain standards of completeness and accuracy of data. This attracted the coöperation of states with the best birth and death records, and tabulations of the vital statistics of these states encouraged other states to take such steps as would make them eligible for admission into the registration areas.

The whole program of the new marriage and divorce work is being developed with the thought of having it proceed in the same way. Marriage and divorce registration areas can be established at any time that the bureau is assured of receiving the funds necessary to continue the work on an annual basis. We hope to be able to define these registration areas on the basis of the first year's returns.

The present collection and tabulation of marriage and divorce statistics in the Census Bureau is to be carried on during the current Census period which runs through 1942. The work is now well under way; the bureau is receiving transcripts of the 1939 marriage and divorce records of most states where they are available from a central office. The bureau will attempt to collect the records of 1939, 1940, and 1941, in order to obtain marriage and divorce frequencies over a period centering around the 1940 Census enumeration, so that average frequencies may be used for rates.

According to present plans we shall make separate tabulations for each of the states from which marriage and divorce data are being collected. This will permit varying the details of tabulations in accordance with differences in amount of information to be supplied by different states. For example, a state which can supply data only on age, race, and residence for marriages, will be represented by a report in which only these items are tabulated, but in such combinations and as great detail as seems warranted. For another state which gives most of the data called for on the transcript form, there will be tabulations comparable with those of the state with limited data, and also such others as the additional data make possible.

Although the current collection of marriage and divorce records will not include those of a number of states, the detailed statistics that we shall be able to tabulate will probably yield certain types of information which can be considered as applicable to the country as a whole. For example, the age distribution of white females who married in 1939 among 28 well scattered states, is very likely to be the same proportional

distribution as would be shown for this group by the country as a whole.

An interesting and fortunate circumstance is the fact that we shall receive the marriage data of a solid block of 13 states in the northeastern section of the country from Maine through Virginia and West Virginia. Not only does this area contain a large proportion of the nation's population, very nearly one-third, but the fact that all of the included states are sending in transcripts of their marriage records means that any serious problem of handling migratory marriages within the area will not arise.

Moreover, every state contiguous to these has some statutory provision, requiring either a waiting period or a pre-marriage physical examination, which tends to deter migratory marriages.

Accordingly, tabulations covering the whole of this group of northeastern states, whose records are for the most part very good and detailed, should provide marriage statistics of a kind that have not been possible in the past, and in which the problem of residence reallocation can be readily handled. Such consolidations of the statistics for groups of contiguous states will be possible also in other sections of the country.

For the present, of course, there will be certain limitations and difficulties in the compilation of tables and the interpretation of data, as a result of the incomplete collection of records. Every aspect of the work, however, is aimed at the possibilities for the future, and these offer considerable promise. A number of states whose marriage and divorce records are not centralized are now taking steps to bring this about under the incentive of the Census Bureau's new interest, and there are other convincing indications that the registration areas, if set up now, will grow rapidly.

Of considerable significance to the further development of national marriage and divorce statistics is the present wide interest in the Model Vital Statistics Act. The act, which gives full recognition to marriage and divorce records as part of vital statistics, represents the best and most desirable means for attaining centralization of records and uniformity in registration and record forms. Adoption of the act by all states would mean solution of most of the problems which now hamper state registration of records and national collection of statistical data.

Comparison of Undechlorinated and Dechlorinated Swimming Pool Waters*

24 and 48 Hour Plate Counts of Samples

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IN the summer of 1934, bacteriological analyses of samples from seven of the large commercial outdoor swimming pools in New York City revealed little correlation between high 24 hour counts and the incidence of coliform bacteria.

It was also observed that the 24 hr. readings were erratic but that after 40 or 48 hr. the colonies developed to a size which enabled easy and accurate enumeration.

Since 1935 both 24 and 48 hr. counts have been made on all swimming pool samples, and pH, chlorine residual at the point of sampling, and the actual number of bathers in the pool water have been carefully recorded. The latter is the only satisfactory method for measuring bathing load. Total attendance has little significance since it also applies to the pools' sand beaches and playgrounds.

The following swimming pools in the New York City metropolitan area have been supervised by the writer: Bronxdale, Castle Hill, Farragut, Jerome, Metropolitan, Miramar, Riverside, and Riviera. In general, capacities are about 450,000 gallons; size, 75 x 150 ft.; and all sterilize with ammonia and chlorine, with the exception of the Miramar Salt Water Pool, which uses chlorine alone. The Castle Hill Pool has a uniform depth of 8 ft. (as contrasted to normal sloping bottoms) and is about twice the average size. Vacuum type chlorinators are installed at all pools, except Jerome and Riverside. Castle Hill and Farragut have direct feed ammoniators. The other pools mentioned feed both chlorine and ammonia by improvised solution type drip feeders. Bronxdale, Jerome, Riverside, Riviera, and Miramar use New York City water—Miramar adding rock salt. Farragut employs well water and Castle Hill and Metropolitan use brakish Long Island Sound water.

Rates of filtration average about 3 gal. per sq. ft. per minute, and turnovers average about 8 hrs. One notable exception is the Farragut Pool which operates at a 5 gal. rate but, from the standpoint of sterilization, this is offset by the exact control provided by a vacuum chlorinator and a direct feed ammoniator. Normal capacity bathing loads are about 400 persons in the pool water at any given time, which represents a gross attendance during the operating day of about 4,000. Extreme peak loads, occurring only a few days each season, are about 800 bathers.

Two collections (of two samples each) are made weekly on good weather

* Read before the Engineering Section of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 9, 1940.

days (1:00–5:00 P.M.) and sampling points are alternated between the opposite sides and ends of the pool.

Since 1936 all samples have been dechlorinated with sodium thiosulfate, transported to the laboratory in an iced container (Thermos jar) and sown within 1 to 4 hr. A bacteria counter with magnifying glass and tabulator is used. Filtered nutrient agar (Difco) is employed and the incubation temperature is 37° C.

Since many state and city health departments have not adopted the A.P.H.A. committee recommendations, there exists a wide variation in bacteriological standards for swimming pools. For instance, the New York State regulations (revised to May 31, 1940) allow 500 colonies per ml. (24 hr. 37°) in 10 per cent of the samples, whereas, the A.P.H.A. standards allow only 200 in 15 per cent of the samples.

A uniform standard for recirculating type pools should be adopted and applied as universally as the U. S. Treasury Department Standards for Drinking Water. The legal aspect created by divergent standards can be embarrassing to the plaintiff as well as to the defendant.

Although dechlorination of swimming pool samples was not officially required until the summer of 1936, it had been advocated prior to that time.

During the 1935 season, the New York City pool owners graciously permitted (for comparison) the collection of both chlorinated and dechlorinated samples from the same sampling point.

Results of these analyses are presented graphically in Figure 1. Individual bacteria counts were grouped 0–5, 6–10, ..., 100–125, ..., etc., and the totals of these groups were plotted as cumulative per cents of the total number of samples. This gives a type of duration curve easily interpreted. Curve "A" shows 24 hr. counts of 92 samples not dechlorinated.

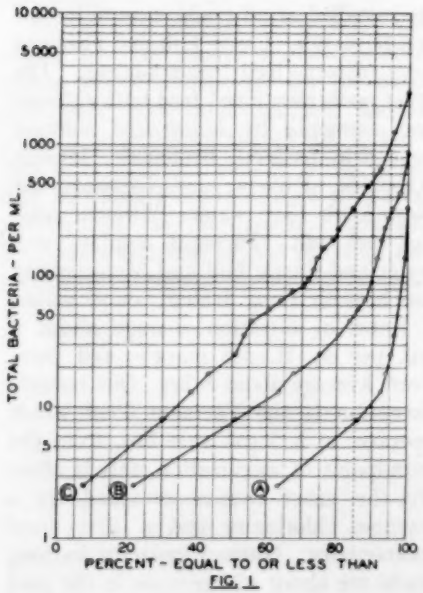

FIG. 1—Comparison of duplicate collections
184 Samples—4 Pools—1935
A = 24 hour count—samples NOT dechlorinated
B = 24 hour count—Samples dechlorinated
C = 48 hour count—Samples dechlorinated

70% (64 samples) had a total count of 3–4, or less

80% (74 samples) had a total count of 6, or less

90% (82 samples) had a total count of 11, or less

100% (92 samples) had a total count of 350, or less

The 85 per cent line is dotted for ready comparison with A.P.H.A. standards, which state that not more than 15 per cent of the samples shall have a total count greater than 200 (24 hr. at 37° C).

Of the undechlorinated samples, only 15 per cent had total counts of greater than 8, compared with the allowable value of 200 per ml.

The effect of dechlorination is shown in curve " B " which crosses the 85 per

cent line at 52: Dechlorination therefore raised the 24 hr. count 650 per cent.

Curve "C" gives 48 hr. counts of the dechlorinated samples. The value of 52 was raised to 340, or an additional 650 per cent.

Curve "B" definitely confirms the necessity for dechlorination, and curve "C" strongly indicates the advisability of changing the period of incubation from 24 to 48 hr.

In 1935 (as well as to date) the maximum allowable count permitted by the New York State Health Department (for 10 per cent of the samples) was 500. If seven commercial pools could maintain waters to give a total count of only 11 (90 per cent of the time), does it not suggest that they must have been exceptionally well operated, or, that the state's standards are perhaps too low?

Previous mention has been made of the lack of correlation between total 24 hr. count and an incidence of coliform bacteria, and the often startling increase (in total count) upon 48 hr. incubation. An extreme example of this tremendous rise is shown in Figure 2, which is an actual photograph of a swimming pool water sample giving a 24 hr. count of about 10 and a 48 hr. reading greater than 1,000. Intestinal

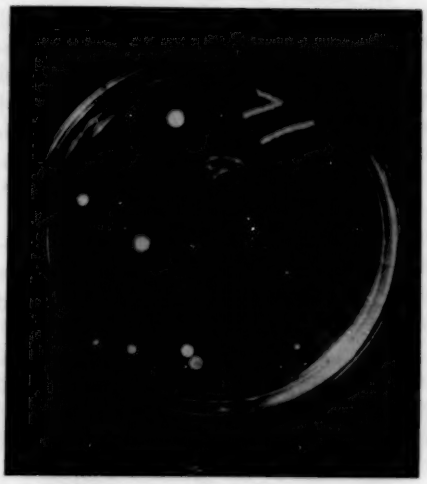

FIG. 2—Examples of low 24 and high 48 hour plate count (dechlorinated sample)

group organisms were found in this sample and it was difficult to reconcile the prescence of coliform bacteria with such a low total count. The high 48 hr. reading justified the condition.

If all 48 hr. counts bore a definite ratio to the 24 hr. results, there would be no necessity for prolonged incubation. However, this is not the case. Some samples may increase less than 100 per cent, while others increase several thousand per cent.

TABLE 1

Summary of Increase in Bacteria Counts Due to 48 Hours of Incubation

171 Samples Containing Coliform Bacteria—7 Pools—1936–40

Group—24 Hour Count	Number of Samples in Group	Per cent of Samples in Group	Number in Group / Per cent Increase on 48 Hours Incubation							
			0–100	101–200	201–300	301–400	401–600	601–1,000	1,001–2,000	2,001–4,000
0– 10	23	14	1	3	2	1	2	2	8	4
11– 25	38	22	4	6	7	4	3	7	4	3
26– 50	30	18	2	5	8	5	3	5	2	0
51–100	31	18	8	1	9	6	3	3	1	0
101–200	31	18	16	10	3	1	1	0	0	0
201–300	16	9	10	4	2	0	0	0	0	0
301–400	1	0.5	1	0	0	0	0	0	0	0
401–500	1	0.5	0	1	0	0	0	0	0	0
Total	171	...	42	30	31	17	12	17	15	7
Per cent	...	100	25	17	18	10	7	10	9	4

In normal surface and well waters most bacteria are derived from the soil and produce relatively large, quick developing colonies, whereas in pool water we have a large proportion of oral and skin types of bacteria which produce small, slow developing colonies. This is evident if samples of urine, sputum, and nasal mucus are sown.

Table 1 lists 171 dechlorinated samples which contained coli-aerogenes group organisms. These were collected from seven pools from 1936 to 1940. Fifty-one of the 171 samples (or 30 per cent) increased from 401 to 4,000 per cent upon incubation for 48 hr. This definitely shows the need for 48 rather than 24 hr. counts for swimming pool waters.

Figure 3 gives the relationship between 24 and 48 hr. counts of 500 routine water analyses—swimming pools excepted.

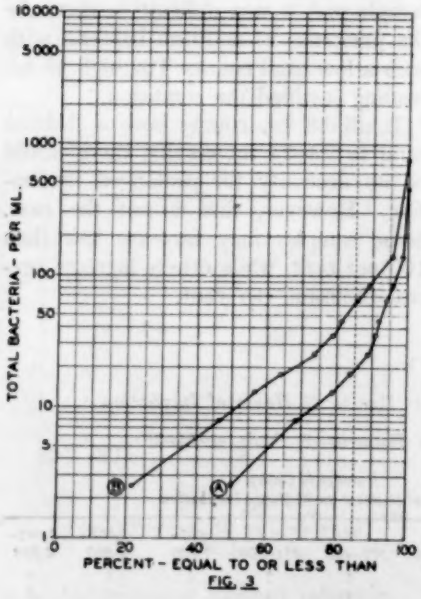

FIG. 3—Relationship between 24 and 48 hour plate counts of normal water samples
500 Routine Analyses: deep and shallow wells—streams—reservoirs—filtration plants, etc.
A = 24 hour count
B = 48 hour count

The 24 hr. count of 5 increased to 15, or 3X
The 24 hr. count of 10 increased to 25, or 2½X
The 24 hr. count of 20 increased to 63, or 3X

Figure 4 shows the relationship between 24 and 48 hr. plate counts of 1,600 dechlorinated samples of swimming pool water.

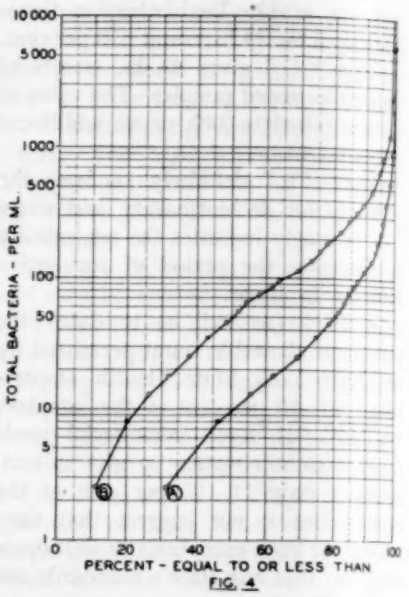

FIG. 4—Comparison of 24 and 48 hour plate counts
1,600 dechlorinated samples—7 pools—1936–40
A = 24 hour count
B = 48 hour count

The 24 hr. count of 5 increased to 30, or 6X
The 24 hr. count of 10 increased to 50, or 5X
The 24 hr. count of 20 increased to 100, or 5X, etc.

In other words, the increase in total count of swimming pool waters due to 48 hr. incubation is from 1½ to 2X that of normal well and surface waters.

Figure 4 also shows the increase that can be anticipated if the 48 hr. count were adopted to replace the 24. During these 5 years of swimming pool opera-

tion, 85 per cent of the samples had a 24 hr. count of 80, as compared with the A.P.H.A. limit of 200. Ninety per cent had a total count of only 110, as compared with the New York State limit of 500. Obviously then, these pools from the standpoint of total counts, operated far better than minimum state and A.P.H.A. requirements.

Bacteriological standards for swimming pool waters cannot be established by epidemiological evidence, which is difficult to obtain, although certain authorities are definite in their conviction that disease may be transmitted by swimming pool waters, and I see no logical reason to the contrary.

The bacteriological standard must be set by permitting a total count and a concentration of intestinal group organisms that is consistent with careful, uniform, and efficient operation.

The bacteria count is simply an indication of the care exercised in pool operation and the efficiency of filtration, sterilization, etc.—just as a bacteria count of less than 30,000 represents careful production, handling, and sterilization of grade A pasteurized milk.

From Figure 4 we see that 85 per cent of the New York City commercial pool samples had a total 24 hr. count of 80, or 40 per cent of the allowable limit set by A.P.H.A. standards. If we apply this factor to the 48 hr. count (275), the allowable limit would be increased from 200 to about 700. The present standards impose no undue hardship on pool operators. A 48 hr. limit (for 85 per cent of the samples) of about 500 would, I believe, be generally acceptable and at the same time would not permit careless or inefficient operation.

Table 2 shows coliform bacteria present in 1,165 samples from six pools for the years 1937 to date. The per cent of samples confirming for these years was 19.1, 11.7, 14.0, and 16.6, respectively.

From the standpoint of coli-aerogenes group organisms, the quality of these pool waters for 1937 and 1940 was below the allowable limit set by the A.P.H.A. standards. They specify that not more than 15 per cent of the *samples* shall show the presence of coliform bacteria in *any* of five 10 ml. portions.

From the standpoint of total count, we have seen that these pools operated well within the standards. Is it not evident that "intestinal group" standards are too severe, or, that "total count" standards are too lax? The former would appear to be true, since for all four years the per cent of *portions* confirming was less than 10 per cent, or, in other words, the pool water would have passed the U. S. Treasury Department Standards for Drinking Water. Also, these samples would have come well within the New York State

TABLE 2

Summary of Incidence of Coliform Bacteria
1,165 Dechlorinated Samples—5 Pools—1937–40

Season	*Total Number of Samples*	*Number of Samples Confirming*	*Number of Portions Confirming*	*Per cent of Samples Confirming*	*Per cent of Portions Confirming*
1937	371	71	153	19.1	8.2
1938	317	37	116	11.7	7.3
1939	308	43	85	14.0	5.7
1940 *	169	28	80	16.6	9.5
Total	1,165	179	437	....	...
Average	291	45	109	15.3	7.5

* To Aug. 15.

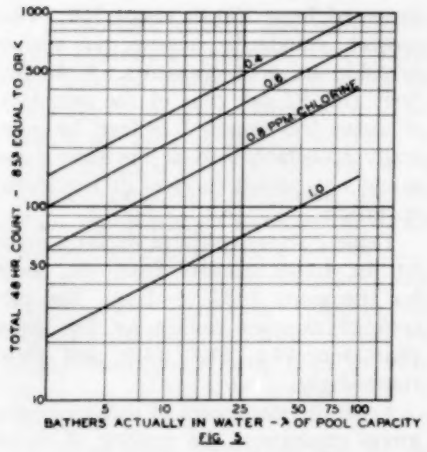

FIG. 5—Relationship of bathing load chlorine residual and 48 hour bacteria count
1,000 dechlorinated samples—6 pools
—1937–40

Health Department regulations, which permit the confirmation of two of five, or, 40 per cent of all *portions* sown.

The coliform bacteria standard should be changed to not more than 15 per cent of the *portions* instead of 15 per cent of the *samples*.

The relationship of bathing load, chlorine residual, and total 48 hr. bacteria count is shown in Figure 5. The curves were approximated by correlation of about 1,000 samples and then smoothed out. It should be borne in mind that the bacteria count is not average but represents the 85 per cent value. For example, a 400,000 gal. pool is assumed to be operated at full capacity when there are 400 bathers *actually in the water*. This is 1,000 gal. per bather and checks with what pool operators in New York City consider a "full pool." Suppose in such a pool the bathing load were 200, or 50 per cent. Then if a residual of 1.0 p.p.m. were maintained, 85 per cent of the samples would have a 48 hr. count of 100 or less. If the chlorine content was 0.8 p.p.m. at this load, the total (85 per cent) count would be about 275. When a pool is operated at 100 per cent capacity, the chlorine should be about 1.0: at 50 per cent capacity, 0.9—at 25 per cent capacity, 0.8—at 10 per cent capacity—0.6, etc., if present A.P.H.A. standards (200) are to be met and plate counts are to be 48 rather than 24 hr. The need for 48 rather than 24 hr. incubation was obvious in the construction of this graph. A definite correlation was found to exist for 48, but little for 24 hr. plate counts.

Figure 6 shows 24 and 48 hr. counts of 177 dechlorinated samples (1936–1940) containing from 1 to 5 portions confirming as coliform bacteria. We find from these curves that there is correlation between total count and incidence of *Escherichia coli*. From Figure 4 (1,600 samples, *some* of which contained *Escherichia coli*), the 24 hr. count of the average sample (50 per

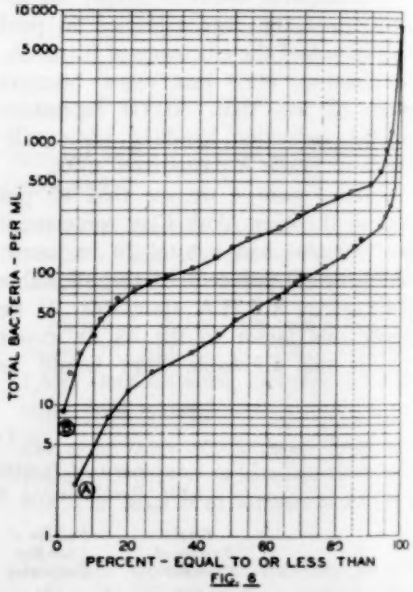

FIG. 6—Relationship between 24 and 48 hour plate counts of samples containing coliform bacteria
177 dechlorinated samples—6 pools—1937–40
A = 24 hour count
B = 48 hour count

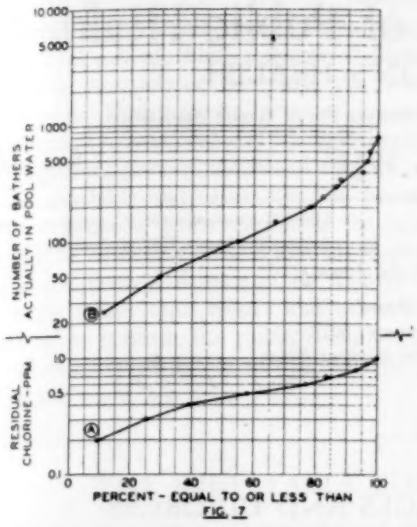

FIG. 7—Chlorine Residuals and Bathing Loads at times when coliform bacteria were present (1 to 5 portions confirming)
171 dechlorinated samples—6 pools —1937–40
A = chlorine residual
B = bathing load

cent line) was 10. Here it is 45. The average 48 hr. count of Figure 4 was 50—here it is 160. The same relationship applies to the 85 per cent line. Here the 24 hr. value increased from 80 to 160, and the 48 hr. value from 275 to 425. This indicates that coliform bacteria are associated with high total counts, and, conversely, that the total count may be used as an index to control the incidence of intestinal group organisms.

Figure 7 shows chlorine residuals and bathing loads at the time of collection of the 171 samples containing intestinal group organisms. At 25 per cent bathing load (100 persons in the pool) the chlorine residual was 0.5: at 50 per cent, 0.6—at 75 per cent, 0.7, and at 100 per cent capacity, 0.8. The capacity was exceeded (greater than 400 in pool water) 7 per cent of the time. The incidence of coliform bacteria was in general due to too low a chlorine residual for the attendant bathing load.

CONCLUSIONS

1. The dechlorination of swimming pool samples is fully justified.
2. The 24 hr. incubation period should be increased to 48 hr.
3. Bacteriological standards should be modified as follows:
   (a) Not more than 15 per cent of the *samples* analyzed should have a total count greater than 500 (48 hr. at 37° C.).
   (b) Not more than 15 per cent of all *portions* sown should show the presence of coliform bacteria.
4. A reasonably definite relationship exists between total 48 hr. count, chlorine residual, and bathing load.
5. State, county, and municipal health departments should adopt a uniform bacteriological standard. This is particularly important from a legal standpoint.

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RECORDS OF MARRIAGES AND DIVORCES

IT is not good editorial policy to comment upon papers, as such, which appear in this or other journals. On the other hand, when a current article presents a matter of considerable importance, especially one that is somewhat off the beaten path of public health, it seems sensible to call attention to the significance of that subject. This preamble, then, is in reference to the desirability of developing a central repository of marriage and divorce records, the necessity of which is discussed elsewhere in this issue of the *Journal*.

Those who have had their perspective of public health frozen along conventional lines may be somewhat impatient of having records of marriage and divorce considered as of importance in their field of work. But such records are of the utmost importance if one sees public health in its broad implications. Vital statistics are, after all, but data which reflect the biologic happenings in a given population. In their barest outline, such data would set forth, only grossly, the numbers born and the numbers dead. However, even the old London bills of mortality made some distinctions as to cause of death and whether "within the walls" or "without the walls." Since then we have come a long way in particularizing our standard certificates of births and deaths, in the completeness of their collection, in the analysis of their contained data, in the care exercised in the storage of these records, and, of great practical importance, in their easy availability for reference and transcribing under proper safeguards. Thus, as time has passed they have become of increasing value, not only as social records, and not only as quantitative measures of racial profit and loss, but equally important is the fact that they provide, to some extent at least, a qualitative picture of the biologic happenings which they represent.

Students of sociology, of population, of fertility have long insisted that vital statistics could not be placed in proper perspective without a more comprehensive knowledge of marriage and divorce. One might disagree with this on the grounds that these two institutions or procedures are social rather than biologic, that really they are but conventions, acting in many instances as biologic brakes. To a limited extent such contentions would be true, but not of significance if it is

borne in mind that, with the exception of the very small proportion of births which occur outside wedlock, marriage ordinarily initiates the beginning of purposeful mating, while a decree of divorce indicates that reproduction as a collaborative function of the particular pair concerned is at an end. Marriage and divorce, therefore, in terms of potential births and in relation to fertility and fecundity, have definite biologic implications, and records of them constitute an important part of the broad subject of vital statistics. That such records should be available and utilizable, and utilized, as are birth and death certificates, is a goal properly to be sought in the interest of the public health. State and local health authorities and those in related fields should lend their sincere assistance to the Federal Bureau of the Census in this undertaking. That health organizations rather than courts and other civic agencies are leading in this effort will tend to confirm the public's beginning awareness that health agencies do about as much constructive and foresighted thinking as any institution of government—if not more.

THE INEVITABLE EDITORIAL ON VACATIONS

BY now many will have returned from vacation, some will be in the process of enjoying or suffering this annual absence from regular work, and to still others the seashore or the mountains or the lakes will continue to beckon. Where one goes, what one does, and the benefits or lack of benefits that one achieves will naturally vary with personalities, tastes, and pocketbooks. To this man, a vacation means nothing more than sunburn, insect bites, and poison ivy; to another, it brings rather complete mental relaxation, a peace of mind from which has been erased the worry of a daily grind's petty details.

Perhaps the most unfortunate and unwise kind of vacation is the one taken in driblets; a series of long week-ends, where in the office or field a hectic attempt is made each Thursday or Friday to finish up certain things that must be done. Then follows a last minute rush for a train, or a high pressure drive to join the family or friends who are taking their ease at Sandy Key or Mountain Retreat. The few days that one is there are not sufficient to permit adjusting to a new routine, and strangely cooked eggs, unlooked for mattress lumps, and bathroom competition are likely to loom larger than they would after a week or so. Further, on this interrupted type of vacation, the day for return to work presses so hard upon the day of arrival that all plans must be in terms of tomorrow or at most the day after. And then back to the job to meet problems which, had they been left to simmer for a week or so, would spontaneously have gone into solution.

No, the fitful vacation is not to be recommended. Take all the time off you can get, and all at once, bearing in mind particularly that with the present unsettled state of affairs this may be your last vacation for a long time to come. Play golf, or climb mountains, or swim, or fish, or do nothing, as suits you. Exhaust yourself physically if such exhaustion is incident to something in which you are interested or which gives pleasure. But above all, do not work at unfinished business. You may of course accomplish something in this way, but the fact that you do is pretty good evidence that the vacation has not been beneficial, and for this reason: the real criterion of a holiday period is whether or not the individual gets so far away from his daily chores that he begins to wonder if he ever did possess competence to do the things called for in his work.

This is the first stage of relaxation, when the mind has drifted gently away from statistics and epidemiology, when the health officers' administrative procedures, the nurses' technics, and the health educators' reference frameworks are sinking into the limbo of the unimportant. Then comes the second stage of vacation psychology, when toward the end of the period new approaches to old problems rise spontaneously in the mind, when thoughts of getting back to the job have a new savor, and one's strength seems as the strength of ten because the mind is pure—or reasonably so. Thus one comes to the end of a perfect vacation, in the first stage having been psychologically purged of the cares that infest the day, and in the second stage, refreshed, alert, and renewed in mental muscle.

The Editor has not yet reached the second stage.

Atlantic City, N. J., Skyline
Seventieth Annual Meeting
October 14–17, 1941

BOOKS AND REPORTS

Vital Statistics of the United States, 1938—*Washington: Government Printing Office,* 1940. Part I, 583 pp. Price, $1.75; Part II, 205 pp. Price, $1.25.

The tremendous task of analyzing in tabular form the vital statistics of a nation of one hundred and thirty millions has been accomplished with clarity, judgment, and scientific accuracy. Part I presents detailed tables of live births, stillbirths, and deaths according to place of occurrence; Part II presents a more limited set of tables of births and deaths allocated to place of residence of the mother or decedent.

The publication of resident data was commenced in 1937. That correction for residence is essential will be seen from the fact that in 1938 "non-resident" deaths numbered 174,000, or 12.6 per cent of the total mortality, while "non-resident" births, 362,000, represented 15.8 per cent of all births recorded in this country. For many cities and rural areas the *recorded* birth and death rates, and even in greater degree the *recorded* death rates from certain causes, are fallacious and dangerously misleading.

Following a close examination of this excellent publication, the reviewer wishes to make this friendly comment:

1. Institutional mortality is much greater than that among the general population, and therefore the practice followed in the report of charging all deaths in "resident" institutions to the communities in which they are located introduces a greater error than that which would result from the allocation of the deaths without a corresponding redistribution of the inmate population. Here is an example that will illustrate this point. According to the report, Suffolk County in New York had 3,328 resident deaths in 1938, of which 1,509 occurred in resident institutions. The allocation of the deaths, but not of the population, of these institutions produces a death rate of 11.8 for the county exclusive of the institutions. If both the population and the deaths in these institutions were excluded, the resident rate of the county would be 10.8. A rate based on the figure given in the report (17.5) would overstate the "true" resident rate by at least 48 per cent $\left(\frac{17.5-11.8}{11.8}\times 100\right)$.

2. The second part of the report devotes 59 pages to Births by Person in Attendance; and Deaths by Institution: Each State, County, and City. The value of this information is decidedly local; for a national audience a one or two page summary by states, and perhaps their urban and rural subdivisions, would seem sufficient. The space gained could be used to great advantage for the presentation of resident rates complementing the recorded rates in Part I, and for a subject index.

J. V. DePorte

Biological Aspects of Infectious Disease—*By F. M. Burnet, M.D. New York: Macmillan,* 1940. 310 pp. Price, $3.75.

It is a pleasure to greet this little book on infectious diseases, written from the viewpoint of a medical biologist. The value of the approach is convincingly presented in the introductory chapters, entitled respectively "The Ecological Point of View" and "The Evolution of Infection and Defence."

The succeeding discussions in Part II, "The Aggressors," and in Part III, "The Processes of Defence," necessarily ring a more familiar note. In a following section the author outlines the more important factors which determine the natural distribution of infectious diseases, the character of epidemics, and the general principles of control. He then illustrates by sketching the epidemiology of diphtheria, influenza, tuberculosis, plague, cholera, malaria, and yellow fever. The reader is somewhat disappointed, however, that the ecological approach has not been more effectively maintained in his considerations of these seven diseases. The epilogue appropriately concludes with a discussion of "new" diseases and the outlook for the future, emphasizing the dynamic character of disease patterns in a turbulent world. To a physician, a medical student, or a non-medical reader with a broad interest in human biology, this book offers a stimulating and readable general survey of the field of epidemiology.

KENNETH F. MAXCY

Medicine and Human Welfare—*By Henry E. Sigerist. New Haven: Yale University Press,* 1941. 148 pp. Price, $2.50.

Dr. Sigerist has the distinction of being a recognized authority in both medical history and medical economics. In this book, the published version of the Terry lectures delivered at Yale, he combines these two fields in a timely essay which sketches the relationship between man and his health from the dawn of Western Civilization to the present war.

The principal emphasis is placed upon the shift from a purely individual responsibility for health and disease to one which is increasingly being assumed by society. The author points out that health is now considered a public right while once it was the privilege of the few. But even now many people are prevented from achieving real health by adverse living and working conditions. Economic circumstances often prevent the physician from reaching the persons who need him most. Physicians must therefore be concerned today not merely with the illnesses of individuals but with the whole social structure which, in the long run, determines health.

From these circumstances, Dr. Sigerist derives a conclusion which many physicians are not yet ready to accept but which he feels will ultimately be to their advantage: that all medical functions should be public functions.

The book is somewhat restricted on account of the brevity necessitated by the lecture form—one wishes for more extensive evidence in many places. It is, however, a readable and engaging presentation, illustrated with a number of interesting photographs.

DEAN A. CLARK

The Avitaminoses—*By Walter H. Eddy and Gilbert Dalldorf* (2nd ed.). *Maryland: Williams & Wilkins,* 1941. 519 pp. Price, $4.50.

So rapid has been the progress in the science of nutrition in the last few years that a book on the subject that is more than two years old is likely to be quite out of date in many of its sections. This second edition of Eddy and Dalldorf, published in February, 1941, follows its first edition by only 4 years. Within those 4 years nicotinic acid has been established as a cure for human pellagra; the chemistry of vitamin K has been unfolded, and its function in human physiology has been established; the synthesis of vitamin B_1 has been accomplished, this following closely on the establishment of its chemical formula in 1935 and 1936; vitamin E has become alpha-tocopheral and this together with the newer vitamins pyridoxine (B_6) and pantothenic acid (filtrate factor) has become the source of

much speculation as to their usefulness in human nutrition.

For the busy practitioner or health officer a guide book to this bewildering and expanding science of nutrition is needed. For a general view of the field of the vitamin deficiency diseases this book can be readily recommended. The chemical background is not overemphasized and is largely collected into a single chapter near the start. The nature and function of each of the vitamins is taken up in a separate chapter with a surprisingly concise statement of the history of its discovery and use. This is followed in each instance by a longer chapter on the clinical and pathological features of the particular clinical disease. With the very useful (but incomplete) bibliographies that follow each chapter, material is thus in hand for a satisfactory understanding of the subject. D. F. MILAM

Community Hygiene—*By L. B. Chenoweth and W. R. Morrison. New York: F. S. Crofts & Co.*, 1941. 317 pp. Price, $2.60.

In the preface, the authors state that they hope this volume may fill a need in colleges for a textbook in some of the broader aspects of hygiene. This it may well do, providing the general college student with an outline of the principal considerations in community hygiene. The insertion of the historical background of some of the diseases and procedures will undoubtedly hold the student's interest in the subject matter. However, as an accurate and current reference to the problems of community hygiene, the book leaves something to be desired.

This book will probably not seriously interest the critical students of public health in community hygiene. In the interest of brevity, the authors appear to have been forced to be rather dogmatic in some of their statements bearing on controversial subjects; and inasmuch as the publication date is 1941, it would seem that the edition would have been improved if more recent tables, charts, and references could have been used in a number of instances.

The general style and arrangement of the book is satisfactory. It will probably serve the purpose for which it was designed. DONALD G. EVANS

Population, Births, Notifiable Diseases, and Deaths, Assembled for New York City, New York. 1866–1938, from Official Records—*Planned by Haven Emerson, M.D. Executed by Harriet E. Hughes. New York: DeLamar Institute of Health, Columbia University*, 1941. 406 tabulation sheets.

This volume is an abstract of the vital statistics from a long series of annual, monthly, and weekly reports for New York City, as well as those from official but unpublished records of the Department of Health. Experience in the use of the original published and unpublished material over a series of years impressed upon the authors the desirability of assembling these records in a more accessible and systematic form. The present volume fills this need and is dedicated " to the convenience of students and teachers of public health."

The volume includes five basic tables titled as follows:

Population by sex and age groups, for federal census years and estimated for intercensal years, 1860–1930

Births, by sex and color, by months, except for 1918, and by sex since 1934

Births, stillbirths, deaths under 1 year, and deaths under 5 years of age, by sex

Deaths, all causes, by sex and age groups

Deaths, by cause, by sex and age groups, and for certain diseases also cases and deaths by weeks or by months

Since these titles do not fully do justice to the content of the tables, a more complete description will be given.

The population table subclassifies sex under age throughout the series of years, and the basic age groups are single

years up to age 5, 5 year groups to age 85, and 85 and over. Although this is the basic grouping, for a number of years it was necessary to combine some of the age groups, the most frequent condensation being the tabulation of age 1–4 as a single group, and ages over 35 in 10 year groups. For the most part, the arithmetic method of estimate for intercensal years was used.

The second table classifies births by sex and by color under calendar month, but does not subclassify sex and color. This basic classification is complete for the years 1867–1880, 1891–1917, 1919–1934, and is partially complete for the other years. The third table, giving births, stillbirths, deaths under 1 and under 5, subclassifies these items according to sex, and covers the years 1870–1938.

Deaths, all causes, are cross-tabulated by age and sex, the age groups being those described in the population table. The table covers 1866–1938.

The bulk of the volume is taken up with the fifth table on cause of death. *The International List of Causes of Death* (1929 Revision) was used, regardless of the year of the experience, adjustments having been made to approach comparability after the period of years. The tables are divided into the fifteen groups of the *International List*. The years covered by the different causes necessarily vary somewhat, but in most cases the tables run back to 1866. The basic tables give the deaths cross-tabulated by age and sex. Additional tables on weeks of the year are included for certain causes.

In the introduction by Dr. Emerson, a discussion of the material is given and certain precautions are stated. Thus, changes in completeness of reporting, discrepancies in annual and monthly reports, and errors in diagnoses are discussed. It should also be remembered that the tables give recorded and not resident births and deaths. A study of the volume indicates that an immense amount of work has been done in preparing these tables, and students of this material will have every reason to be grateful to Dr. Emerson and Miss Hughes for making it so readily available.

LOWELL J. REED

Feeding Our Old Fashioned Children—*By C. Anderson Aldrich, M.D., and Mary M. Aldrich. New York: Macmillan,* 1941. 112 pp. Price, $1.75.

"To provide a background—to establish the fact that there is a mechanism for eating and to show how life in a modern household is likely to interfere with it," is the aim of this little book, according to its authors. To an unusual degree they have succeeded in doing what they set out to do. They give no diet lists nor feeding schedules but instead they give intelligent parents an insight into the physiological and psychological processes of the child which must be understood and taken into account if feeding is to be the normal and joyous process it was intended to be.

This book can be recommended unreservedly to all thoughtful parents for reading and rereading.

MERRILL E. CHAMPION

Personal Problems of Everyday Life—*By Lee Edward Travis and Dorothy Walter Baruch. New York: Appleton-Century,* 1941. 392 pp. Price, $2.75.

The purpose of the book is to convey to the average intelligent reader the data and constructions developed in psychopathology. These are presented in reference to the emotional problems that beset the individual in his attempt to attain the life goals in the cultural setting in which he lives. It further gives the individual guidance in dealing with these problems, in seeking aid if he is unable to cope with the problems alone.

The authors carry their presentation through the problems that beset the individual in childhood, in adolescence, in marriage, in work and in play. They take their guidance chiefly from psychoanalysis. In carrying out their plan, they present scientific data and constructions, with few exceptions, without compromise to the popular purpose. When a compromise in the presentation is made, further reading corrects the wrong impressions. It would be desirable if the authors in their next edition eliminated these compromises and also if they presented more of the total personality and of the effects of the cultural environment. The former would show how disturbed functions in addition to historical determinants are maintained through intra-psychic and intra-human vicious circles; the latter how the individual's needs, ideals, and fears, are interwoven with his current environment.

The purpose of the book is worth while and the authors accomplish successfully what they set out to do. Thus, we have one of the rare books, expertly written in a popular style. It should have a beneficial and healthy effect on the average intelligent individual.

BELA MITTELMANN

Periodicity and Cause of Cancer, Leukaemia and Allied Tumours—*By J. H. Douglas Webster. Baltimore: Williams & Wilkins,* 1940. 179 pp. Price, $3.50.

The author has made a gallant attempt to bring the clinical course of malignant disease into line with the cyclic phenomena so common in nature. The evidence presented is decidedly unconvincing. For example, in a discussion of cancer a small number of cases is presented in which the sudden shift in clinical course after a long latent period is offered as proof of periodicity. In the absence of recurrent periods of activity and inactivity at regular intervals, it is difficult to understand the pertinence of the examples presented. This is particularly true since many of the patients were treated and the effect of treatment ignored in the consideration of the periodicity of the course.

Similarly, in a consideration of leukemia, the extraordinary variability of clinical course is advanced as evidence of periodicity. The fact of cyclic swing of clinical manifestations in this disorder is, of course, undeniable. On the other hand, the accepted periodicity does not correspond with the time intervals described by this author. He claims intervals of several months, whereas in the experience of most, the peaks of clinical activity rarely come more than four weeks apart. Furthermore, he ignores the effect of treatment as a factor which may cause alterations in the clinical course.

All in all, this type of publication is to be condemned. C. P. RHOADS

Introduction to Psychobiology and Psychiatry—*By Esther Loring Richards, M.D., Sc.D. St. Louis: Mosby,* 1941. 357 pp. Price, $2.50.

This "text book for nurses" is really in three parts: (1) Its first two chapters are a rapid but quite thorough survey of the matrix within which psychobiology has had its setting. (2) The next four discuss "personality study material." They cover various topics of the autobiographic record which the nurse is urged to make. Dr. Richards insists that these records must not be made without good supervision and help. These chapters, amplified with lectures, would make an excellent basis for self-analysis that would not be morbid and which would bring out positive and worth while assets. (3) Half of the book discusses the various categories of mental illness (psychiatry). It emphasizes a "way of looking at" these phenomena instead

of a gnawing urge to give them names. No one can go through these two hundred pages without beginning to forget about psychoses and starting to think about those various ways in which certain sorts of people are working away at the problems of life.

While the whole book is written in simple and thoroughly understandable style (with sudden little flashes of simile that are much to the point), its content is very uneven. A paragraph directed to a none-too-academically minded pupil nurse is followed by one that is directed to the fairly sophisticated psychiatrist. The handling of the various actual difficulties (well, for instance, delirium) is beautifully done and gives the nurse the feeling that she can do the right thing and have some real notion as to why she is doing it. But there is certainly much that she will understand only with skillful interpretation.

Used as an outline for a fuller discussion (by a really competent person), this volume can play a magnificent part in getting nurses to understand themselves and their patients. Without that interpretation, the usual nurse will feel compelled to do considerable memorizing. This is the last thing that so sensible a psychiatrist as Dr. Richards would want—but the two types of material are too closely interwoven to allow any other course.

JAMES S. PLANT

The Doctor Takes a Holiday— *By Mary McKibben-Harper. Cedar Rapids, Iowa: The Torch Press,* 1941. 349 pp. Price, $2.50.

This is an excellent book for vacation reading, especially for those concerned with health promotion. The author carries you with her in a witty narrative as she travels from London, with a brief stay in Paris before embarking at Marseilles for the Orient. The reader is exposed to fun and frolic, poverty and disease, as well as the efforts being made to relieve conditions in the major countries of Asia.

The effect of tradition and superstition is thoroughly recognized by the author but interpreted with tolerance and understanding. While deploring unfortunate conditions, she refers to situations in the United States which are also permitted to exist, though both the economic resources and knowledge are available to correct them:

> Despite differences in eastern and western ideologies, some of the shocking customs and superstitions bear striking similarities to those of the West, while others appear to have a common origin. These similarities, rather than the more obvious differences, intrigued me and I returned fully persuaded that people are much alike, the world over.

Efforts to introduce scientific medicine and to encourage the application of hygienic practices are noted. Women physicians were sought out and their work is critically observed. (The Lady Hardinge Medical College for Women, at Delhi, is described in glowing terms: "... situated in a garden spot, an oasis of forty-five acres ... and architecturally beautiful ... the buildings ... accommodate a hundred medical students and one hundred and fifty patients of different races and religions. ... The operating room of the hospital ... is the finest in the world, entirely staffed by women. ...")

After a visit to Benares, "all pilgrimages are followed by epidemics the world over and the path of the health officer is beset with difficulties."

(Though the author is aware of weaknesses and inefficiency in national and local programs provided to raise the level of living and to promote the health of the peoples, plausible reasons for the failures are offered.) The work of women physicians impressed the author most favorably. "That women have a sympathetic insight, devotion and patience in medical work, has been wonderfully demonstrated in India."

Throughout the book the reader is shown beauty, the beauty of mountains, of plains, of sunsets, as well as of the great monuments of the world; of the Taj Mahal. "This first glimpse of the Taj satisfies one that he has been born for that moment . . ." Appreciation of beauty does not, however, lessen the author's awareness of health problems. "I forsook the pursuit of beauty temporarily for an adventure in the study of leprosy."

Unfortunately, dates are not always given, so the reader is unable to decide whether some of the statements refer to before or after the world was thrown into its present state of chaos.

The realism and fairness with which situations are reported stimulate the imagination and furnish information.

SALLY LUCAS JEAN

BOOKS RECEIVED

FUNDAMENTALS OF HEALTH. By T. Bruce Kirkpatrick and Alfred F. Huettner. Rev. ed. Boston: Ginn, 1941. 595 pp. Price, $3.80.

OUTLINES OF INDUSTRIAL MEDICAL PRACTICE. By Howard E. Collier. Baltimore: Williams & Wilkins, 1941. 440 pp. Price, $5.00.

SOCIAL CASE RECORDS FROM PSYCHIATRIC CLINICS. By Charlotte Towle. Chicago: University of Chicago Press, 1941. 455 pp. Price, $3.00.

START TODAY! YOUR GUIDE TO PHYSICAL FITNESS. By C. Ward Crampton. New York: Barnes, 1941. 224 pp. Price, $1.75.

EMPLOYEE TRAINING IN THE PUBLIC SERVICE. POLICIES AND PRACTICES IN PUBLIC PERSONNEL ADMINISTRATION. Chicago: Civil Service Assembly, 1941. 172 pp. Price, $2.50.

PREPAYMENT PLANS FOR MEDICAL CARE. By Franz Goldmann. New York: Medical Administration Service, 1941. 60 pp. Price. $.25.

FAMILY LIVING AND OUR SCHOOLS. By Bess Goodykoontz, *et al.* New York: Appleton-Century, 1941. 468 pp. Price, $2.50.

THE PRINCIPLES OF DAIRYING. By Henry F. Judkins and Merrill J. Mack. 3d ed. New York: Wiley, 1941. 315 pp. Price, $3.00.

PHYSICAL EDUCATION FOR SMALL ELEMENTARY SCHOOLS. By Harold K. Jack. New York: Barnes, 1941. 184 pp. Price, $1.60.

FOOD ANALYSIS. TYPICAL METHODS AND THE INTERPRETATION OF RESULTS. By A. G. Woodman. 4th ed. New York: McGraw-Hill, 1941. 607 pp. Price, $4.00.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASES. Course Outline and Digest of Lectures given in Coöperation with the National Conservation Bureau. New York: Center for Safety Education, Division of General Education, New York University, 1941. Price, $1.25.

TOBACCO AND HEALTH. By Arthur H. Steinhaus and Florence M. Brunderman. 2d ed. New York: Association Press, 1941. 48 pp. Price, $.35.

NEW HEALTH AND GROWTH SERIES. By W. W. Charters, Dean F. Smiley and Ruth M. Strang.

ALL THROUGH THE DAY. Book One. 178 pp. Price, $.64.

THROUGH THE YEAR. Book Two. 180 pp. Price, $.72.

HEALTH SECRETS. Book Three. 242 pp. Price, $.76.

HEALTHFUL WAYS. Book Four. 246 pp. Price, $.76.

LET'S BE HEALTHY. Book Five. 278 pp. Price, $.80.

HABITS, HEALTHFUL AND SAFE. Book Six. 268 pp. Price, $.84.

GROWING UP HEALTHILY. Book Seven. 277 pp. $.84.

A SOUND BODY. Book Eight. 310 pp. Price, $.88.

HEALTH IN A POWER AGE. Book Nine. 333 pp. Price, $1.08.

New York: Macmillan, 1941.

MOBILE HOMES. A STUDY OF TRAILER LIFE. By Donald Olen Cowgill. Washington: American Council on Public Affairs, 1941. 127 pp. Price, Paper, $2.00.

SOCIOLOGY AND SOCIAL PROBLEMS IN NURSING SERVICE. By Gladys Sellew. Philadelphia: Saunders, 1941. 344 pp. Price, $2.75.

SOCIOLOGY APPLIED TO NURSING. By Emory S. Bogardus and Alice B. Brethorst. Philadelphia: Saunders, 1941. 294 pp. Price, $2.50.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Paper-of-the-Month — Nine hundred delegates came to Washington to talk over the nation's nutrition problems. It is impossible to epitomize here even the fields of discussion. Every health worker worth his salt will ask for this summary of the proceedings which will later be available in completed form.

ANON. The National Nutrition Conference. Pub. Health Rep. 56, 24:1233 (June 13), 1941.

Putting Back the Vitamins—Although whole grain cereals are nutritionally preferred foods, the council on foods and nutrition recognizes that the preference for white flour cannot be ignored, hence it believes that it is in the interest of public health to encourage the use of enriched white flour, along with a greater use of whole wheat products.

ANON. Nutritionally Improved or Enriched Flour and Bread. J.A.M.A. 16, 26:2849 (June 28), 1941.

Vitamins in British Bread—In England, the new "National Flour" must contain 85 per cent of all the wheat kernel instead of the 70 per cent found in ordinary white bread. This means that the maximum amount of the germ and aleuron layer is retained with the least amount of pericarp. To this, calcium carbonate and iron salts in the prescribed amounts should be added.

ANON. National Flour for Bread. Brit. Med. J. 4195:828 (May 31), 1941.

State H. O.'s Discuss National Defense—What must have been a very busy national conference heard the Surgeon-General tell of the war experiences of the British medical services and the lessons they point for us. After him, speakers proceeded to discuss our own problems of industrial hygiene, rural health services, venereal disease, and tuberculosis. Important resolutions were adopted which you should know about.

ANON. State and Territorial Health Officers Confer on Health Defences. Pub. Health Rep. 56, 23:1191 (June 6), 1941.

1940 Statistics Are Here—Influenza and poliomyelitis cases were more numerous in 1940 than the average for the preceding five years. Otherwise the communicable disease business for the year was below the average.

ANON. Morbidity and Mortality During 1940 and Recent Preceding Years. Pub. Health Rep. 56, 21:1100 (May 23), 1941.

Testing Influenza Vaccine—Half the employees of a hospital were vaccinated against influenza. A month later an epidemic occurred. Though fewer vaccinated employees became sick, the difference was not statistically significant. However, the severity and duration of the infection was markedly reduced, and that is an important finding.

DALLDORF, G., *et al.* A Controlled Clinical Test of Influenza A Vaccine. J.A.M.A. 116, 23:2574 (June 7), 1941.

Pneumonia Still Is Communicable—Isolation precautions should not be terminated when convalescence is apparent, but should be continued until the patient is discharged or until repeated throat cultures are negative. This is the wise conclusion reached through some sad experiences.

GELLIS, S. S., and MITCHELL, A. G. Cross Infection with Type 1 Pneumococcus. J.A.M.A. 116, 13:2580 (June 7), 1941.

TB and Student Nurses—In one hospital, at least, the incidence of tuberculosis found among entering medical students and student nurses and the infections developing during the stay in the hospital is less than would be expected among young men and women generally in the comparable ages. Possible reasons are discussed.

HAHN, R. G., *et al.* Pulmonary Tuberculosis in Medical Students and Nurses. Am. Rev. Tuberc. 43, 5:600 (May), 1941.

Malnutrition North of the Border—From preliminary reports of dietary surveys in Canadian communities it appears that there, too, the nutrition of low income groups is unsatisfactory. Typically, father is the best fed, youngest children next, then older, with mother poorest fed. Calcium, the B vitamins, and iron are the great deficiencies.

MCHENRY, E. W. Determination of Nutritional Status (and four related papers). Canad. Pub. Health J. 32, 5:231 (May), 1941.

Industrial Fact Finding and Education—A U.S.P.H.S. survey of Los Angeles recommended a municipal industrial hygiene program for the health department. At the time none of the plants surveyed had a full-time medical service. Less than half the industrial employees had physical examinations, and many potential hazards were unearthed. What the newly established division attempted should interest other municipal health officials.

NASATIR, A. V. The Los Angeles Industrial Hygiene Program. Indust. Med. 10, 6:236 (June), 1941.

Stitch-in-Time Department — Anticipating the loss of public health nurses, the Detroit Health Department evolved a plan of having much of the non-technical work done by lay volunteers. In the tuberculosis, school nursing, child welfare, and communicable disease programs there was found much that non-professionals could do.

Ross, G. We Plan Ahead. Pub. Health Nurs. 33, 6:334 (June), 1941.

Tuberculous Individuals in Industry — An example of intelligent tuberculosis case finding, care, and rehabilitation in industry is reported. The findings of the study will prove of great interest to health workers generally.

SAWYER, W. A. Control of Tuberculosis. Indust. Med. 10, 6:221 (June), 1941.

V.D.—All the recommendations of an eminent advisory committee intended to make for more efficient state and local venereal disease control programs are too numerous and important to be summarized here. This is a State Paper for all administrators to ponder over.

VONDERLEHR, R. A., *et al.* Recommendations for a Venereal Disease Control Program. J.A.M.A. 116, 23:2585 (June 7), 1941.

Nervous Tissue Viruses—If in an "information, please" program you were told that there were nine forms of encephalitis due to viruses with an affinity for nervous tissue, and were asked to name at least five of them, could you do it? Then you should read this brief classification of them.

WEBSTER, L. T. Classification of Primary Encephalitides of Man According to Virus Etiology. J.A.M.A. 116, 26:2840 (June 28), 1941.

The Other Side of the Picture—Health workers, concerned principally with the calories and vitamins that go into the mouths of their clients, will profit by reading the discussion of the larger questions of the national supply of the protective foods.

WILSON, M. L., *et al.* Food for a Stronger America. Survey Graphic. 30, 7:367 (July), 1941.

ASSOCIATION NEWS

NOMINATIONS FOR THE GOVERNING COUNCIL

IN accordance with the By-Laws of the Association, the Nominating Committee for Governing Council members, consisting of one Fellow from each Section, reports the following nominations for the Governing Council. The By-Laws provide that "upon the petition of twenty-five Fellows, the Nominating Committee shall add the name of any Fellow to this list, provided such petition is received fifteen days before the Annual Meeting." The Chairman of the Committee is Huntington Williams, M.D., Commissioner of Health, Baltimore, Md. The other members are: Leverett D. Bristol, M.D., Industrial Hygiene Section; Walter H. Brown, M.D., Maternal and Child Health Section; Marjorie Delavan, Public Health Education Section; J. V. DePorte, Ph.D., Vital Statistics Section; Joseph A. Kasper, M.D., Laboratory Section; Henry M. Loomis, Food and Nutrition Section; Sol Pincus, C.E., Engineering Section; Marian G. Randall, R.N., Public Health Nursing Section; Clarence L. Scamman, M.D., Epidemiology Section; Noble A. Upchurch, M.D., Health Officers Section.

There are thirty elective councillors on the Governing Council of whom ten are elected each year. The ten Fellows receiving the highest number of votes on a written ballot cast by the Fellows present and voting at the Annual Meeting in Atlantic City will be elected for the three year term 1941–1944.

Gaylord W. Anderson, M.D.
University of Minnesota
Minneapolis, Minn.

Leon Banov, M.D.
Health Officer
Charleston, S. C.

Leona Baumgartner, M.D.
Department of Health
New York, N. Y.

Helen Bean, R.N.
U. S. Marine Hospital
New Orleans, La.

J. F. Blackerby
State Department of Health
Louisville, Ky.

Selwyn D. Collins, Ph. D.
U. S. Public Health Service
Bethesda, Md.

Joel I. Connolly
Department of Health
Chicago, Ill.

Hazel Corbin
Maternity Center Association
New York, N. Y.

James A. Doull, M.D.
Western Reserve University
Cleveland, Ohio

Martha M. Eliot, M.D.
Children's Bureau
Washington, D. C.

Haven Emerson, M.D.
Columbia University College of Physicians and Surgeons
New York, N. Y.

Katharine Faville, R.N.
Henry Street Nursing Service
New York, N. Y.

J. C. Geiger, M.D.
Director of Public Health
San Francisco, Calif.

Marjorie M. Heseltine
Children's Bureau
Washington, D. C.

H. E. Kleinschmidt, M.D.
National Tuberculosis Association
New York, N. Y.

A. J. Lanza, M. D.
Metropolitan Life Insurance Company
New York, N. Y.

Kenneth F. Maxcy, M.D.
Johns Hopkins School of Hygiene and Public Health
Baltimore, Md.

Stanley H. Osborn, M.D.
State Commissioner of Health
Hartford, Conn.

George T. Palmer, Dr.P.H.
Department of Health
New York, N. Y.

Earle B. Phelps
Columbia University College of Physicians and Surgeons
New York, N. Y.

Alton S. Pope, M.D.
State Department of Public Health
Boston, Mass.

I. C. Riggin, M.D.
State Health Officer
Richmond, Va.

George C. Ruhland, M.D.
Health Officer
Washington, D. C.

Edith P. Sappington, M.D.
Children's Bureau
San Francisco, Calif.

Clarence D. Selby, M.D.
General Motors Corporation
Detroit, Mich.

Marion W. Sheahan, R.N.
State Department of Health
Albany, N. Y.

William P. Shepard, M.D.
Metropolitan Life Insurance Company
San Francisco, Calif.

William D. Stovall, M.D.
State Hygienic Laboratory
Madison, Wis.

Clair E. Turner, Dr.P.H.
Massachusetts Institute of Technology
Cambridge, Mass.

C.-E. A. Winslow, Dr.P.H.
Yale University School of Medicine
New Haven, Conn.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Claude M. Cooke, M.D., City Health Dept., City Bldg., Danville, Ill., Director of Health

Albert Dumas, M.D., D.P.H., Health Unit, County Labelle, Mont-Laurier, Quebec, Can., Health Officer

James V. Foley, M.D., M.P.H., Bannock County Health Unit, Pocatello, Ida., Director

Owen A. Groves, M.D., Court House, Charleston, W. Va., Kanawha County Health Officer

Dan R. Herkimer, M.D., 1682 Fort St., Lincoln Park, Mich., Health Officer

Harold A. Howard, M.D., 330 Main St., Wethersfield, Conn., Health Officer

Andrew D. Johnston, M.D., District Health Office, Osceola, Mo., Health Officer

Wilbert W. Lawrence, M.D., Court House, Norwalk, Ohio, Huron County Health Commissioner

George A. Nevitt, D.D.S., M.S.P.H., Kellogg Foundation, Battle Creek, Mich., Fellow

Emily M. Pierson, M.D., Main St., Cromwell, Conn., Health Officer

Harold W. Seff, M.D., Bibb County Health Dept., Centerville, Ala., Health Officer

John F. Shronts, M.D., M.S.P.H., 111 Dean St., Woodstock, Ill., District Health Officer

Filbert A. Silveira, M.D., 235 Green St., Fairhaven, Mass., Health Officer

Paul H. Stevenson, M.D., Dr.P.H., China Medical Board, 3304 The Alameda, Baltimore, Md., Staff Member, Peiping Union Medical College

Laboratory Section

Elton M. Andrew, M.A., 823½–9th Ave., Helena, Mont., Analyst, State Board of Health

Betty M. Bowser, M.S., 3114 Hazelhurst Ave., Pittsburgh, Pa., Laboratory Instructor, Univ. of Pittsburgh

Herbert C. Brenon, Ph.D., 1574 Crossroads of World, Hollywood, Calif., Director, Brenette Medical Laboratory

G. John Buddingh, M.D., Vanderbilt Medical School, Nashville, Tenn., Asst. Professor, Dept. of Pathology

Ezra P. Casman, Ph.D., Abington Memorial

Hospital, Abington, Pa., Chief Bacteriologist

Charles A. Dille, M.D., 880 Fidelity Medical Bldg., Dayton, Ohio, Pathologist, Good Samaritan Hospital

W. Harry Feinstone, Sc.D., 1937 West Main St., Stamford, Conn., Research Bacteriologist, American Cyanamid Co.

Clarence A. Forthman, U. S. Naval Hospital, Washington, D. C., C. Ph. M., U. S. Navy

Walvin R. Giedt, M.D., M.P.H., State Health Laboratory, Vermillion, S. D., Asst. Director, Div. of Laboratories, State Health Dept.

Russell W. H. Gillespie, Ph.D., 216 Forest Ave., Vermillion, S. D., Consulting Bacteriologist, State Health Laboratory

Eunice Gutermute, A.B., Box 1611, Salinas, Calif., Bacteriologist, Monterey County Health Dept.

H. Orin Halvorson, Ph.D., 215 Millard Hall, Univ. of Minnesota, Minneapolis, Minn., Professor of Bacteriology

Commander Albert P. Krueger (M.C., U.S.N.R.), 1770 Arch St., Berkeley, Calif., Officer in Charge, Laboratory Research Unit 1

Frances M. McConnell, M.D., 1900 Dahlia St., Denver, Colo., Director, Div. of Laboratories, State Board of Health

Ruth M. Myers, M.S., 1641 Chilton St., Baltimore, Md., Associate Bacteriologist, State Dept. of Health

LaVerne R. Thompson, R.N., M.A., 525 West 120th St., New York, N. Y., Instructor in Microbiology, Div. of Nursing Education, Teachers College

Charles Urbach, M.D., Ph.D., 1730 Delancey St., Philadelphia, Pa., Research Laboratory, Childrens Hospital of Philadelphia

A. Elizabeth Verder, Ph.D., National Institute of Health, Bethesda, Md., Bacteriologist, Div. of Infectious Diseases

Onie O. Williams, M.D., St. Joseph's Hospital, Phoenix, Ariz., Director of Laboratories

Vital Statistics Section

Herbert A. Raskin, M.S.P.H., 2491 Pingree St., Detroit, Mich., Student, Univ. of Michigan

Engineering Section

William L. Baugh, Jr., M.S., Box 1495, Lubbock, Tex., Field Engineer, State Health Dept.

Robert D. Bovey, 422 State House, Boise, Ida., Milk Sanitarian, State Dept. of Public Health

J. B. Carey, B.S. in C.E., 923 Court House, Atlanta, Ga., Sanitary Engineer, Fulton County Dept. of Health

Arthur W. Clarkson, B.S. in C.E., Y.M.C.A., Hannibal, Mo., Public Health Engineer, Hannibal-Marion County Health Dept.

C. Heard Field, 106 E. 55th St., Savannah, Ga., Sanitary Engineer, Chatham County Board of Health

Charles G. Hammann, Sr., B.S., 331 State Office Bldg., Providence, R. I., Engineer in Charge, Sanitary Inspection Section, State Dept. of Health

Paul W. Purdom, B.S. in C.E., 1023–3rd St., S.E., Moultrie, Ga., Colquitt County Public Health Engineer

Joe L. Robinson, B.S. in Ch.E., City Health Dept., Fort Worth, Tex., Field Engineer, Bureau of Sanitary Engineering, State Health Dept.

R. August Schaller, B.S., State Board of Health, Monett, Mo., District Public Health Engineer

R. J. Schliekelman, M.S., 517 W. Maple St., Centerville, Iowa, Public Health Engineer, District Health Service 2

Guy R. Scott, B.S., M.P.H., 107 Village 1, Sheffield, Ala., Sanitary Engineer, Tennessee Valley Authority

Walter H. Sheffield, B.S., 91–14th St., N.E., Atlanta, Ga., Public Health Engineer (Trainee), State Dept. of Public Health

Marvin S. Stanley, State Board of Health, Helena, Mont., Fiscal Agent

Taylor D. Storey, B.S. in C.E., Georgia Dept. of Public Health, Engineering Div., Atlanta, Ga., Assistant Engineer

Cyrus H. Watson, 528 S. 10th St., Pocatello, Ida., Senior Sanitarian, State Dept. of Public Health

Industrial Hygiene Section

Joe H. Latimore, B.S. in C.E., Idaho Dept. of Public Health, Div. of I. H., Boise, Ida., Assistant Sanitary Engineer

William N. Wells, B.S. in Ch.E., 3403 University Drive, Fort Worth, Tex., Industrial Hygiene Engineer, State Dept. of Health

Charles D. Yaffe, M.S., National Institute of Health, Bethesda, Md., Associate Public Health Engineer

Food and Nutrition Section

Dr. J. Almanzor Bedoya, Alfonso Ugarte 167, P. O. Box 295, San Miguel, Lima, Peru, S. A., Director of Technical Alimentation, Public Health Ministry

Nicholas C. Leone, Ph.G., 5239 Shattuck Ave., Oakland, Calif., Food and Drug Inspector, State Dept. of Public Health

Mario Quinones, M.D., 2a Sinaloa 55, Mexico, D. F., Mexico, Secretary General, Dept. of Health

Dorothy Spurling, B.S., Ukiah, Calif., Nutritionist, State Dept. of Public Health

Maternal and Child Health Section

Agnes L. Fuller, 425 W. 21st St., New York, N. Y., Supervising Nurse, City Dept. of Health

Warren H. Gardner, Ph.D., 718 Oregon Bldg., Portland, Ore., Consultant in Hearing and Vision, State Board of Health

Majorie A. Hicok, B.S., 1125 Jay St., Colusa, Calif., Dental Hygienist, Bureau of Maternal and Child Hygiene, State Dept. of Health

Hilda H. Kroeger, M.D., Court House, Room 14, Tucson, Ariz., Assistant Director, Health Dept.

Marie-Louise Pareti, M.D., 906 Main St., Franklin, La., Associate Director, St. Mary Parish Health Center

Dr. Earl J. Sauer, 110 N. Morrison Ave., Collinsville, Ill., Assistant Dentist, Div. of Dental Health Education, State Dept. of Health

Inez C. Tyler, M.D., C.P.H., Kern County Health Dept., Bakersfield, Calif., Director of Maternal and Child Hygiene

Public Health Education Section

Harry L. Acker, B.S., 2425 Blossom St., Columbia, S. C., Field Agent, Div. of Venereal Disease Control, State Board of Health

Tomas Blanco, M.D., 24 Magdalena Ave., Santurce, Puerto Rico, Director of Health Education, Insular Dept. of Health

Joseph D. DeMasi, M.Ed., 1044 Chapel St., New Haven, Conn., State Health Supervisor, National Youth Administration

Mildred I. Derenbaker, R.N., 4170 Bancroft St., San Diego, Calif., Senior Stenographer-Clerk, San Diego County Health Dept.

Emily M. Duntz, M.S., 12 Seneca St., Geneva, N. Y., Executive Secretary, Ontario County Committee on Tuberculosis and Public Health, Inc.

Dalton O'Brien, M.D., 94 Larchwood Drive, Cambridge, Mass., Medical Supervisor, Posture Dept., Cambridge School Dept.

Rigoberto Rios-Castro, Independencia No. 2, Santiago, Chile, S. A., Chief, Div. of Health Education, National Public Health Service

Warren H. Southworth, M.A., 260 Waverley Ave., Watertown, Mass., Teacher, Dept. of Biology and Public Health, Massachusetts Institute of Technology

Arthur W. Towne, B.A., Loew Bldg., Syracuse, N. Y., Secretary, Onondaga Health Assn.

Richard T. Viguers, LL.B., 41 E. 57th St., New York, N. Y., Associate, Div. of Rural Hospitals, The Commonwealth Fund

Public Health Nursing Section

Eva L. Borden, State Dept. of Public Health, Santa Fe, N. M., Midwife Consultant

Irene E. Carlson, R.N., 45 Second St., Room 409, San Francisco, Calif., Field Supervisor, California Tuberculosis Assn.

Edith Carr, R.N., B.S., 1600 N. 8th St., Boise, Ida., Acting Director, Public Health Nursing, Dept. of Health

Bertha W. Griffith, Harney County Health Assn., Burns, Ore., Public Health Nurse

Lois Heagler, R.N., 1803 Pine St., St. Louis, Mo., District Supervisor, Municipal Visiting Nurses

Thelma M. Jones, Bannock County Health Unit, Pocatello, Ida., Senior Public Health Nurse

Opal Jordon, R.N., Bannock County Health Unit, Pocatello, Ida., Public Health Nurse

Charlotte McLoughlin, R.N., Kanawha County Health Dept., Charleston, W. Va., Public Health Nurse

Edith M. Mills, Portola, Plumas County, Calif., District Nurse, Bureau of Child Hygiene, Plumas County School System

Virginia E. Platt, R.N., M.A., 2340 Clay St., San Francisco, Calif., Instructor and Supervisor in Public Health, Stanford Univ.

Epidemiology Section

Solomon J. Axelrod, M.D., Erlanger Hospital, Chattanooga, Tenn., Junior Medical Officer, State Dept. of Health

Herman Goodman, M.D., 18 East 89th St., New York, N. Y., Assistant Director, Bureau of Social Hygiene, Dept. of Health

Unaffiliated

Abraham H. Bayer, B.S., 710 Eastern Ave., Schenectady, N. Y., Director of Research and Production, General Ice Cream Corp.

R. C. Bellingham, D.D.S., Cascade, Mont., School Dentist, County-City Health Dept.

Charles H. Carpenter, D.D.S., State Health Dept., Cheyenne, Wyo., Director, Div. of Dental Health

Merrill F. Krughoff, M.A., 910 Fidelity Bldg., Dallas, Tex., Executive Secretary, Council of Social Agencies

Mildred Mumby, M.D., 1872 Hamlin St., Seattle, Wash.

DECEASED MEMBERS

B. BARRETT GILMAN, M.D., Boston, Mass., Elected Member 1937

ALLEN KRAMER KRAUSE, M.D., Providence, R. I., Elected Member 1925

JOHN J. SHAW, M.D., Harrisburg, Pa., Elected Member 1939

A.P.H.A. MERIT SYSTEM STUDY

MILTON ROSE, M.D., Professor of Public Health, School of Medicine, University of Pennsylvania, has joined the Association staff for the summer months as Consultant to the Merit System Study. This project was undertaken as the result of a request from federal and state agencies to the Committee on Professional Education for assistance to the states in setting up merit systems for public health personnel. A Subcommittee on Merit Systems was appointed by the Committee on Professional Education consisting of George H. Ramsey, M.D., Chairman, Reginald M. Atwater, M.D., Martha L. Clifford, M.D., Dorothy Deming, R.N., Alfred H. Fletcher, and W. Frank Walker, Dr.P.H. The work is under the supervision of a Joint Conference Committee between the Conference of State and Territorial Health Officers and the Merit Systems Subcommittee, with Felix J. Underwood, M.D., acting as Chairman of the Conference Committee and Edward S. Godfrey, Jr., M.D., and Robert H. Riley, M.D., the other representatives from the Conference of State and Territorial Health Officers.

"CREDIT LINES" WILL BE CONTINUED

AT its June meeting, the Editorial Board reviewed the eleven months' experience with "Credit Lines" as a feature of the *Journal* and voted to invite Dr. Donald B. Armstrong and John Lentz to continue this feature with the expectation that the content would be built even closer to some of the pertinent section interests.

Many of the readers of the *Journal* who have expressed an interest in this feature will be glad to know that "Credit Lines" will resume with the September issue of the *Journal*.

ML. VS. CC.

THE Editorial Board of the AMERICAN JOURNAL OF PUBLIC HEALTH at its June meeting considered a uniform designation for .001 liter. It was noted that among chemical and physical journals and other publications the trend was unmistakably in the direction of using milliliter (ml.) instead of cubic centimeter (cc.).

In addition to the clear trend in the direction of the use of ml., the Coördinating Committee of the Laboratory Section and the Committee on Research and Standards have approved the use of ml. in the manuscript for the forthcoming Eighth Edition of *Standard Methods for the Examination of Dairy Products*, and the Editorial Board voted to standardize all A.P.H.A. publications on the term ml., since it was the proper metric liquid measure.

SEVENTIETH ANNUAL MEETING

ATLANTIC CITY, N. J., OCTOBER 14–17, 1941

HEADQUARTERS
Convention Hall

RAILROAD FARES FROM VARIOUS POINTS TO ATLANTIC CITY, N. J.

American Public Health Association
October 14–17, 1941

From	*One-way for Pullman Travel*	*Round-trip for Pullman Travel*	*One-way Lower Berth*	*One-way Upper Berth*
Atlanta, Ga.	$24.95	$39.70(2)	$6.60(8)	$5.15(8)
Baltimore, Md.	4.90	9.65(3)	2.65	1.80
Boston, Mass.	11.90	22.60(1)	3.20(8)	2.35(8)
Buffalo, N. Y.	14.30	27.20(3)	3.15	2.20
Chicago, Ill.	26.30	47.70(3)	6.30	4.35
Cleveland, O.	16.15	30.50(3)	3.95	2.70
Dallas, Tex.	46.79	72.40(3)	12.40(8)	9.55(8)
Denver, Col.	57.36	94.30(3)	13.95(8)	10.75(8)
Duluth, Minn.	39.97	68.25(3)	9.50(8)	7.35(8)
Fort Worth, Tex.	47.68	73.70(3)	12.40(8)	9.55(8)
Indianapolis, Ind.	23.35	42.85(3)	6.05	4.15
Jacksonville, Fla.	29.50	46.50(2)	7.90(8)	6.15(8)
Kansas City, Mo.	39.10	67.90(3)	9.45	7.20
Louisville, Ky.	25.15	45.80(3)	6.30	4.35
Los Angeles, Cal.	90.54	138.00(6)	22.60(8)	17.35(8)
Memphis, Tenn.	33.90	53.10(2)	8.95	6.80
Milwaukee, Wis.	28.85	51.55(3)	6.85(10)	4.90(10)
Minneapolis, Minn.	38.51	66.05(3)	8.95(8)	6.95(8)
Nashville, Tenn.	27.65	43.75(2)	7.10	5.40
New Orleans, La.	39.50	61.50(2)	10.00(8)	7.75(8)
New York, N. Y.	4.10	7.00(1)	.80(7)	
Omaha, Nebr.	41.21	70.15(3)	9.50(8)	7.35(8)
Philadelphia, Pa.	2.05	2.30(4) 2.55(5)	.55(7)	
Pittsburgh, Pa.	12.50	23.95(3)	3.15	2.20
Portland, Ore.	90.69	138.00(6)	22.60(8)	17.35(8)
Salt Lake City, Utah	71.09	107.05(6)	17.10(3)	13.15(8)
San Francisco, Cal.	90.54	138.00(6)	22.60(8)	17.35(8)
Seattle, Wash.	90.69	138.00(6)	22.60(8)	17.35(8)
St. Louis, Mo.	30.75	55.35(3)	7.65	5.25
Washington, D. C.	6.05	11.85(3)	2.65	1.80
Montreal, Que.	16.05	32.15(3)	3.70(8)	2.75(8)
Halifax, N. S.	34.70	63.80(1)	8.45(8)	6.35(8)
Ottawa, Ont.	18.35	36.85(3)	4.30(9)	3.35(9)
Quebec, P. Q.	20.65	40.55(3)	5.30(8)	3.80(8)
Toronto, Ont.	18.50	34.80(3)	3.70(8)	2.75(8)
Vancouver, B. C.	90.69	138.00(6)	22.60(8)	17.35(8)

NOTES: (1) 10 day limit (2) 30 day limit (3) 60 day limit (4) 2 day limit
(5) 4 day limit (6) 3 months limit (7) seat (8) berth to Philadelphia seat to Atlantic City
(9) seat to Montreal, berth to Philadelphia, seat to Atlantic City
(10) seat to Chicago, berth to Atlantic City

RATES QUOTED BY ATLANTIC CITY HOTELS

Seventieth Annual Meeting, October 14 to 17, 1941

AMERICAN PUBLIC HEALTH ASSOCIATION

ALL RATES QUOTED ARE FOR ROOMS WITH BATH ON EUROPEAN PLAN

(Rooms without Bath and Two Bedrooms with Bath Between Are Available in Some Hotels)

Boardwalk Hotels

Key No.	*Single Rooms with Bath*	*Double Rooms with Bath*
32 Ambassador ..	$3-$4-$5-$6	$6-$7-$8-$10
22 Brighton	$3-$4-$5	$5-$6-$7-$8
6-7 Chalfonte-Haddon Hall	$3-$4-$5-$6-$8	$6-$8-$10-$12
33 Chelsea	$3-$4-$5	$5-$6-$7-$8
28 Dennis	$3.50-$4-$5-$6	$6-$7-$8-$9-$10
14 Knickerbocker	$3-$3.50-$4	$5-$6-$7
11 New Belmont	$2.50-$3	$4-$5-$6-$7
34 President ...	$3	$5.50-$7-$8
31 Ritz - Carlton	$3-$3.50-$4-$5	$5-$6-$7-$8-$10
4 Seaside	$3-$3.50-$4	$5-$6-$7
29 Shelburne ...	$4-$5-$6-$8-$10	$6-$7-$8-$10-$12
21 Traymore ...		$8-$10-$12

All hotels offer Suites and DeLuxe Rooms. Rates can be ascertained by direct correspondence with the individual hotels.

Avenue Hotels

Key No.	*Single Rooms with Bath*	*Double Rooms with Bath*
30 Arlington ...	$3.50-$4	$5-$6
19 Byron		$4.50-$5-$5.50-$6
8 Colton Manor	$3-$3.50-$4-$5	$5-$6-$7-$8-$9
25 Crillon*		$5-$6
26 Eastbourne ..		$4.50-$5-$6
15 Flanders	$3-$4	$5
24 Glaslyn-Chatham		$5
17 Jefferson	$3-$3.50	$5-$6
18 Kentucky ...	$2.50	$4
9 Lafayette ...	$3-$3.50-$4	$5-$6-$7
20 Madison	$3-$3.50-$4	$5-$6-$7
16 Monticello ..		$5
3 Morton	$2.50-$3-$3.50-$4	$5-$6-$7
10 Penn-Atlantic	$3	$5
13 Princess	$2.50	$4
Runnymede..	$2.50-$3-$3.50-$4	$4-$5-$6-$7
12 Senator	$3-$3.50-$4	$5-$6-$7

* Breakfast Included

MORE than 1,000 reservations have already been made in the headquarters hotel—The Traymore—and other nearby hotels. Only double rooms at $8.00 and up remain in the Traymore. The lower priced accommodations in all hotels naturally go first. Reservations should be made promptly on the form printed below. Please send it to the Hotel Committee, 16 Central Pier, Atlantic City, N. J., and *not* to the Association office.

Between Convention Hall and the Traymore, the Boardwalk hotels where rooms are still available are the Shelburne and the Dennis. Beyond the Traymore, the Knickerbocker, Belmont, Chalfonte-Haddon Hall, and Seaside all offer excellent accommodations. Beyond Convention Hall, there are the Ritz-Carlton, Ambassador, and Chelsea Hotels. Do not overlook the Avenue hotels. Some are removed only a little distance from the Boardwalk, which to many people is no disadvantage.

.....**(Cut off on this line and mail to Mr. Morgan)**.....

APPLICATION FOR HOTEL ACCOMMODATIONS

American Public Health Association

In making application for hotel accommodations, it is necessary that at least three choices of hotels be indicated and that a reasonable range of rates desired be shown. Whenever possible, arrangements should be made for double occupancy of rooms; only a limited number of single rooms are available.

A. J. MORGAN, Chairman
HOTEL COMMITTEE
16 Central Pier,
Atlantic City, N. J.

.....19.....

Dear Sir:—Please make hotel reservations noted below:

Hotel ..... First Choice

Hotel ..... Second Choice

Hotel ..... Third Choice

.... Double Rooms with bath for .... persons. .....Rate desired $.... to $.... per day

.... Single Rooms with bath. .....Rate desired $.... to $.... per day

.... Suites—Parlor, ... Bedroom(s) with bath for .... persons. ....Rate desired $.... to $.... per day

Arriving October ....., hour ..... A.M. ..... P.M. Leaving .....

If the hotel of first choice is unable to accept the reservation, the HOTEL COMMITTEE will endeavor to comply with your second or third choice in the order named. You will receive direct confirmation from the hotel accepting the reservation when made.

Rooms will be occupied by:

Name	*Street Address*	*City*	*State*

Preliminary Program of the Scientific Sessions of the 70th Annual Meeting of the American Public Health Association, and Meetings of Related Organizations, and of the Eighth Institute on Public Health Education

Atlantic City, N. J.

October 11-17, 1941

THE Annual Meeting Program Committee offers a preview of the content of scientific sessions planned in connection with the 70th Annual Meeting in Atlantic City, N. J. Inaccuracies and omissions are to be expected and it is hoped they will be excused. The professional affiliations and addresses of speakers are not given, but a complete index to participants will be published in the final program which will be distributed to all delegates at the Registration Desk, Convention Hall. Registration headquarters will be opened at 9:30 A.M. on Sunday, October 12.

THE EIGHTH INSTITUTE ON PUBLIC HEALTH EDUCATION

(Under the Auspices of the Public Health Education Section of the American Public Health Association)

SATURDAY, SUNDAY, MONDAY, AND TUESDAY A.M.

Saturday

6:30 P.M. Dinner Meeting for Leaders and Committee—Stratosphere Room, Hotel Traymore.

Preview of the Institute Program. IRA V. HISCOCK, SC.D.

Leadership in Health Education. H. A. OVERSTREET, PH.D.

Sunday

9:30 A.M. First General Session—Room E, Convention Hall.

Outline of Institute Program. IRA V. HISCOCK, SC.D., *Chairman*

Basic Principles for Health Education. HARRY S. MUSTARD, M.D.

10:30 A.M. Group Discussions with Leaders—Convention Hall.

1. **Health Instruction by the Nurse.** MARGARET G. ARNSTEIN, R.N.
2. **Health Instruction in Child Health Conferences.** MAYHEW DERRYBERRY, PH.D., and JULIUS LEVY, M.D.
3. **Health Instruction by the Sanitarian.** MARTIN A. POND, M.P.H.

INSTITUTE ON PUBLIC HEALTH EDUCATION (Cont.)

Sunday, *10:30 A.M.* (Cont.)

4. **How to Make Exhibits.** HOMER N. CALVER.

5. **A Coöperative Health Education Project on Tuberculosis in a High School.*** SOPHIE RABINOFF, M.D.

   a. **The Plan in Action—Rôle of Teacher.** H. S. DUGLATZ, PH.D.

   b. **Student Participation.** CLEMENT LAVIN.

   c. **Adaptation of Experience to Coöperative Health Work.** KATHERINE Z. W. WHIPPLE.

6. **Planning the School Curriculum for Health Education, Teacher Participation, and Faculty Health Councils.** VIVIAN DRENCKHAHN.

2:00 P.M. Group Discussions with Leaders—Hotel Traymore.

1. **How to Lead Discussion.** JULIUS E. WARREN.
   (Demonstration will include participation of lay and professional committee members.)

2. **Exhibit Mistake Clinic.** BRUNO GEBHARD, M.D.

   a. **What to Say.** H. E. KLEINSCHMIDT, M.D.

   b. **How to Show.** BRUNO GEBHARD, M.D.

   c. **How to Build.** ROBERT SCHMUCK.

   d. **How to Use.** DAVID B. TREAT.

3. **A Health Department's Appraisal of Its Educational Materials and Methods.** MARGARET WITTER BARNARD, M.D.

   A. **District Health Officer Committee Reports:**

      a. **Evaluation of Pamphlets.** EUGENE O. CHIMENE, M.D.

      b. **Exhibits and Visual Aids.** JOHN B. WEST, M.D.

      c. **Health Education in Coöperation with Schools.** HAROLD H. MITCHELL, M.D.

      d. **Meetings and Community Organization.** MAX BERNSTEIN, M.D.

      e. **Monographs on Essential District Work.** JEROME MEYERS, M.D.

   B. **The Health Officer as an Educational Leader in His Community.** DOROTHY B. NYSWANDER, PH.D.

   C. **Fitting the Broad Educational Program to Local Needs.** CHARLES F. BOLDUAN, M.D.

4. **Educational Technics for Nutrition.** ESTELLA FORD WARNER, M.D.

4:00 P.M. Motion Picture Demonstration—Grand Ball Room, Hotel Traymore. ALICE V. KELIHER, PH.D.

5:00 P.M. Relaxation Hour—Rose Room, Hotel Traymore.

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* Joint Participation of East Harlem Health Center, Department of Health, Benjamin Franklin High School, and New York Tuberculosis and Health Association, New York, N. Y.

INSTITUTE ON PUBLIC HEALTH EDUCATION (Cont.)

Monday

9:30 A.M. Second General Session—Room E, Convention Hall.

Psychological Approaches to Health Instruction. MAYHEW DERRYBERRY, PH.D.

10:30 A.M. Group Discussions with Leaders—Convention Hall.

1. **Principles of Unit Construction.** MARY ELLA CHAYER.

   Participants:

   ARTHUR J. JONES, PH.D.
   BESS EXTON
   FANNIE B. SHAW
   RUTH E. GROUT, PH.D.

2. **Participation of Professional Groups in Health Education.** W. W. BAUER, M.D.

3. **Steps in the Preparation of a Health Department Report.** GEORGE H. RAMSEY, M.D.

4. **Interrelation of Health Education and Group Work Programs.** EDITH GATES.

5. **The Contribution of Citizens' Committees to Health Education.** EVELYN K. DAVIS

2:00 P.M. Group Discussions with Leaders—Convention Hall.

1. **Do We Speak the Same Language? Some Definitions of Terms Used in Health Education.** DELBERT OBERTEUFFER, PH.D.

   Participants:

   RUTH E. GROUT, PH.D.
   FANNIE B. SHAW
   GEORGE H. RAMSEY, M.D.
   LEONA BAUMGARTNER, M.D.

2. **Panel Discussion—Health Education Procedures for Local Dental Health Programs.** J. M. WISAN, D.D.S.

3. **Current and Future Programs of Education Regarding Syphilis and Gonorrhea.** R. A. VONDERLEHR, M.D.

4. **Printed Matter Clinic.** JOHN HALL and RAYMOND S. PATTERSON, PH.D.

5. **Coöperation of Specialty Groups in Health Education.** MARY P. CONNOLLY.

6. **Educational Publicity Consulting Service and Demonstration of Source Material.** MARY SWAIN ROUTZAHN.

4:30 P.M. Conducted Tour of Exhibits. BRUNO GEBHARD, M.D., and HOMER N. CALVER.

INSTITUTE ON PUBLIC HEALTH EDUCATION (Cont.)

Tuesday

9:30 A.M. Third General Session—Room E, Convention Hall.

Highlights of the Institute. H. E. KLEINSCHMIDT, M.D., DOROTHY B. NYSWANDER, PH.D., WILLIAM P. SHEPARD, M.D., EARLE G. BROWN, M.D., and IRA V. HISCOCK, SC.D.

Throughout the Institute, Educational Publicity Consulting Service and Demonstrations of Source Material will be conducted by Mrs. Mary Swain Routzahn at Consultation Headquarters in Convention Hall. Source Materials—National Health Agencies.

NOTE: A final program of the Institute may be obtained from the Association office, 1790 Broadway, New York, N. Y. The registration fee is $3.00 for members of the American Public Health Association; and $6.00 for all others. Registration will be closed at the discretion of the Chairman and early enrollment is accordingly recommended.

OTHER SATURDAY, SUNDAY, AND MONDAY MEETINGS

AMERICAN SCHOOL HEALTH ASSOCIATION

Monday, *2:30 P.M. First General Session—Room E, Convention Hall.*

Presiding: AMOS L. BEAGHLER, M.D., President.

SYMPOSIUM ON CURRENT PROBLEMS IN SCHOOL HEALTH ADMINISTRATION

School Health Administration—An Overview. HAROLD D. CHOPE, M.D.

School Sanitary Problems as Observed by the Public Health Engineer. JOEL I. CONNOLLY.

Teachers Are Human, Too. FREDRIKA MOORE, M.D.

Relationship of Reading Ability to Visual Efficiency as Determined by Snellen and Telebinocular Tests. CHARLES E. SHEPARD, M.D.

Community Planning in School Health Education. ALICE H. MILLER, C.P.H.

Discussion: CHARLES C. WILSON, M.D., and LEROY A. WILKES, M.D.

Monday, *6:30 P.M. Dinner Session—Como Hall, Hotel Chelsea.*

Presiding: CHARLES H. KEENE, M.D.

Address of Welcome. NORMAN J. QUINN, M.D.

THE ASTORIA-LONG ISLAND CITY SCHOOL HEALTH STUDY

Educational Aspects. DOROTHY B. NYSWANDER, PH.D.

Health Service Aspects. GEORGE M. WHEATLEY, M.D.

Discussion: GEORGE T. PALMER, DR.P.H., and HAROLD H. MITCHELL, M.D.

AMERICAN SOCIAL HYGIENE ASSOCIATION

Sunday, *8:30 P.M. Grand Ball Room, Hotel Traymore.*

PROTECTING DEFENSE INDUSTRIAL WORKERS FROM VENEREAL DISEASES

Presiding: LEVERETT D. BRISTOL, M.D.

Protection of Workers in Civilian Defense Industries. JAMES G. TOWNSEND, M.D.

Protection of Workers in Government Defense Industries (Arsenals, Navy Yards, Etc.). CAPTAIN ERNEST W. BROWN.

Point of View of the Employer. Speaker to be announced.

Point of View of Organized Labor. Speaker to be announced.

Discussion Leader: WALTER CLARKE, M.D.

ASSOCIATION OF WOMEN IN PUBLIC HEALTH

Monday, *6:30 P.M. Dinner Session—Submarine Grill, Hotel Traymore.*

COMMITTEE ON ADMINISTRATIVE PRACTICE

Monday, *2:00 P.M. Room F, Convention Hall.*

Presiding: E. L. BISHOP, M.D.

This is an open session to which the general membership of the Association is invited.

The program will begin with a brief review by E. L. Bishop, M.D., of the work of the Committee on Administrative Practice during the past year. There will follow discussions on the Allocation of Funds to County and City Health Departments, and the Evaluation of Public Health Practices through the new fact-finding schedule for the Health Conservation Contests.

The respective sponsors are the Study Committee to Develop Principles and Criteria for the Allocation of Public Health Funds from the State to Municipal and Rural Health Units, Harry S. Mustard, M.D., *Chairman,* and the Subcommittee on Health Conservation Contests, Henry F. Vaughan, Dr.P.H., *Chairman.*

CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Monday, *9:30 A.M. Committee Room 2, Convention Hall.*

Housing and the Public Health Engineer. C.-E. A. WINSLOW, DR.P.H.

Discussion.

Public Health Engineers in Defense. A. GRANT FLEMING, M.D.

Monday, *2:30 P.M. Committee Room 2, Convention Hall.*

Committee Reports.

Business Session.

Election of Officers.

CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS AND CONFERENCE OF STATE SANITARY ENGINEERS

Monday, *12:30 P.M. Pine Room, Hotel Traymore—Joint Luncheon.*

For the officers and executive committee of the Conference of Municipal Public Health Engineers and officers and representatives of the Conference of State Sanitary Engineers.

Brief discussion on ways and means of coördinating the committee work of the two Conferences.

CONFERENCE OF STATE AND PROVINCIAL PUBLIC HEALTH LABORATORY DIRECTORS

Monday, *9:30 A.M. and 2:30 P.M. Room G, Convention Hall.*

Monday, *12:30 P.M. Luncheon Session—Submarine Grill, Hotel Traymore.*

CONFERENCE OF STATE DIRECTORS OF HEALTH EDUCATION

Monday, *9:30 A.M. and 2:30 P.M. Committee Room 4, Convention Hall.*

CONFERENCE OF STATE DIRECTORS OF PUBLIC HEALTH NURSING

Monday, *9:30 A.M. and 2:30 P.M. Committee Room 11, Convention Hall.*

CONFERENCE OF STATE SANITARY ENGINEERS

Sunday, *10:00 A.M., 2:00 P.M. and 8:00 P.M. Mandarin Room, Hotel Traymore.*

Monday, *9:00 A.M. and 2:00 P.M. Committee Room 3, Convention Hall.*

Monday, *8:00 P.M. Mandarin Room, Hotel Traymore.*

CONFERENCE ON ORTHOPEDIC NURSING

Saturday, *9:30 A.M. and 2:30 P.M. Chippendale Room, Hotel Traymore.*

Sunday, *9:30 A.M. and 2:30 P.M. Chippendale Room, Hotel Traymore.*

Limited to 30 supervisors—registration closes September 15. Applications should be addressed to Jessie L. Stevenson, R.N., National Organization for Public Health Nursing, 1790 Broadway, New York, N. Y.

INTERNATIONAL SOCIETY OF MEDICAL HEALTH OFFICERS

Monday, *9:30 A.M. and 2:30 P.M. Room D, Convention Hall.*

Monday, *6:30 P.M. Dinner Session—Belvedere Room, Hotel Traymore.*

NEW JERSEY HEALTH AND SANITARY ASSOCIATION

Monday, *6:30 P.M. Dinner Session—Wedgewood Room, Hotel Chelsea.*

For Whom the Bell Tolls. ABEL WOLMAN, DR.ENG.

SESSIONS FROM TUESDAY, OCTOBER 14, TO FRIDAY, OCTOBER 17, INCLUSIVE

TUESDAY, 9:30 A.M.

HEALTH OFFICERS

First Session—Room F, Convention Hall

Presiding: EARLE G. BROWN, M.D.

SYMPOSIUM ON MENTAL HYGIENE

The Hospital Treatment of Mental Patients in the United States. SAMUEL W. HAMILTON, M.D.

Administrative Organization for Mental Hygiene in the United States. V. H. VOGEL, M.D.

The Relationship of Mental Hygiene to a Local Health Department Program. WILLIAM F. ROTH, JR., M.D., W. C. WILLIAMS, M.D., and F. H. LUTON, M.D.

The Connecticut State Health Department Mental Hygiene Program. JAMES M. CUNNINGHAM, M.D.

The Public Health Significance of Mental Hygiene Problems Appearing in Criminal and Traffic Courts. LOWELL S. SELLING, M.D.

EPIDEMIOLOGY

First Session—Room A, Convention Hall

Presiding: JOHN A. FERRELL, M.D.

Address of the Chairman. JOHN A. FERRELL, M.D.

Prophylactic Value of Pertussis Vaccine as Determined by a 3 Year Field Study. JAMES E. PERKINS, M.D.

Opsonocytophagic Response to Whooping Cough Vaccination. ALVIN E. KELLER, M.D., J. CYRIL PETERSON, M.D., and PAUL M. DENSEN, D.SC.

Development of Tuberculosis and Changes in Sensitivity to Tuberculin During Ten Years in an Institution for the Feebleminded. DAVID ZACKS, M.D., and PHILIP E. SARTWELL, M.D.

The Epidemiology of Tuberculosis in a Mental Hospital. JOHN K. DEEGAN, M.D., J. E. CULP, M.D., and F. BECK, M.D.

Tuberculosis Among Ten Thousand Mentally Ill Patients, as Revealed by 35 Millimeter Chest Films and Gastric Lavage. HERMAN E. HILLEBOE, M.D., RANDALL B. HAAS, M.D., and CARROLL E. PALMER, M.D.

TUESDAY, 9:30 A.M.

LABORATORY

First Session—Room D, Convention Hall

Presiding: ELLIOTT S. ROBINSON, M.D.

Section Business.

Report of the Coördinating Committee on Standard Methods. *Chairman,* LIEUTENANT COLONEL A. PARKER HITCHENS, M.D.

Report of the Standard Methods Committee on Biology of the Laboratory Animal. *Chairman,* COLONEL RAYMOND A. KELSER, PH.D.

Report of the Standard Methods Committee on Biological Products. *Chairman,* ELLIOTT S. ROBINSON, M.D.

Report of the Laboratory Section Representative on the Commission for the Study of Biological Stains. WILLIAM D. STOVALL, M.D.

The Isolation of Group I Meningococci from the Genitourinary Tract of Nine Patients. CHARLES M. CARPENTER, M.D., and RUTH CHARLES.

Laboratory Methods in Tuberculosis. HENRY C. SWEANY, M.D.

Therapeutic Use of Normal Human Plasma and Serum. SIDNEY O. LEVINSON, M.D.

Discussion: LIEUTENANT COMMANDER L. R. NEWHOUSER, M.D.

Methods of Production and Control of Normal Human Plasma and Serum. MILTON V. VELDEE, M.D.

Discussion: JOHN REICHEL, V.M.D.

ENGINEERING SECTION, CONFERENCE OF STATE SANITARY ENGINEERS, AND CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Joint Session—Room G, Convention Hall

Presiding: HARRY B. HOMMON, B. A. POOLE and AIMÉ COUSINEAU.

Report of the Committee on Water Supply. *Chairman,* ANSELMO F. DAPPERT.

Report of the Committee on Industrial Sanitation. *Chairman,* W. SCOTT JOHNSON.

Report of the Committee on Waterways Pollution. *Chairman,* CARL E. GREEN, C.E.

Report of the Committee on Sewage Disposal. *Chairman,* LANGDON PEARSE.

Report of the Committee on Plumbing. *Chairman,* JOEL I. CONNOLLY.

TUESDAY, 9:30 A.M.

INDUSTRIAL HYGIENE

First Session—Room C, Convention Hall

Presiding: WILLIAM J. MCCONNELL, M.D.

Address of the Chairman. **Mobilization of Industrial Hygiene for National Defense.** WILLIAM J. MCCONNELL, M.D.

Industrial Hygiene in Canada's Defense Program. KINGSLEY KAY, PH.D.

Management's Interest in the Maintenance of Employee Health. B. H. SWEENEY.

The State Medical Society's Responsibility in Industrial Hygiene. RAYMOND HUSSEY, M.D.

FOOD AND NUTRITION

First Session—Room H, Convention Hall

Presiding: A. C. HUNTER, PH.D.

MILK AND DAIRY PRODUCTS

Is There a Need for the Reinforcing of Milk? E. V. MCCOLLUM, PH.D.

Thiamine Content of Milk in Relation to Vitamin B_1 Requirements of Infants. ELIZABETH KNOTT, PH.D.

Availability of Calcium in Milk. JULIA P. OUTHOUSE, PH.D.

Growth Promoting Quality of Milk Protein. CARRELL H. WHITNAH, PH.D.

Report of the Committee on Milk and Dairy Products. *Chairman,* MERRILL J. MACK.

TUESDAY, 12:30 P.M.

MATERNAL AND CHILD HEALTH

Luncheon Session—Rose Room, Hotel Traymore

Section Business.

TUESDAY, 12:30 P.M.

LABORATORY

Luncheon Session—Belvedere Room, Hotel Traymore

LOOKING INTO THE PAST AND FUTURE OF THE SECTION

Report of the Section Archivist. AUGUSTUS B. WADSWORTH, M.D.

TUESDAY, 2:30 P.M.

VITAL STATISTICS SECTION AND AMERICAN ASSOCIATION OF REGISTRATION EXECUTIVES

Joint Session—Room G, Convention Hall

Presiding: R. N. WHITFIELD, M.D., and JOHN T. MARSHALL.

The Completeness of Birth Registration in the United States for 1940. ROBERT F. LENHART.

Discussion: P. K. WHELPTON.

Organization of Vital Statistics Work. FORREST E. LINDER, PH.D.

Discussion: MARGUERITE F. HALL, PH.D., and CARL E. BUCK, DR.P.H.

Effect of War on Vital Statistics. JOHN T. MARSHALL.

Discussion: HARRY S. MUSTARD, M.D.

Summary of Delayed Registration. A. W. HEDRICH, SC.D.

Discussion: TRAVIS P. BURROUGHS, M.D.

LABORATORY AND EPIDEMIOLOGY SECTIONS

First Joint Session—Room E, Convention Hall

Presiding: ELLIOTT S. ROBINSON, M.D., and JOHN A. FERRELL, M.D.

The Rôle of Type XIV Pneumococci in Producing Illness. WILSON G. SMILLIE, M.D., and OLGA F. JEWETT.

A Study of an Epidemic of Type I Pneumococcus Pneumonia with Special Reference to Immunization with the Felton Antigen. BERNARD F. BLUM, M.D.

Unclassified Pneumococcus Strains in Relation to the Production of Therapeutic Sera. GRACE M. SICKLES.

Analysis of Pneumococcal Typing Methods from Results Obtained with 9,403 Consecutive Specimens. ANNABEL W. WALTER, GERTRUDE R. DANGLER, MARIE ROMANO and ANNA R. EISENSTADT.

Antitoxin Formation in Rabbits. JULES FREUND, M.D.

Recent Studies in the Serological Classification of Hemolytic Streptococci. REBECCA C. LANCEFIELD, PH.D.

LABORATORY

Second Session—Room D, Convention Hall

Presiding: JAMES GIBBARD.

The Influence of Wetting Agents upon the Action of Various Antiseptics. C. VIRGINIA FISHER, PH.D.

The Value of the Self-Antiseptic Properties in Clothing. L. H. JAMES, PH.D.

TUESDAY, 2:30 P.M.

LABORATORY (Cont.)

Second Session—Room D, Convention Hall

Use and Abuse of Staphylococcus Aureus as a Test Organism. C. M. BREWER, PH.D.

The Relative Toxicity of Certain Antiseptics Containing Soap and Alcohol with Special Reference to Mouth Washes. HENRY WELCH, PH.D., and C. M. BREWER, PH.D.

Bacteriologic Study of Radiant Disinfection of Air in the Control of Epidemic Spread of Contagion. WILLIAM F. WELLS AND RICHARD GREEN.

HEALTH OFFICERS, FOOD AND NUTRITION, MATERNAL AND CHILD HEALTH, AND PUBLIC HEALTH NURSING SECTIONS, AND AMERICAN SCHOOL HEALTH ASSOCIATION

Joint Session—Room F, Convention Hall

Presiding: EARLE G. BROWN, M.D., A. C. HUNTER, PH.D., ESTELLA FORD WARNER, M.D., RUTH HOULTON, R.N., and AMOS L. BEAGHLER, M.D.

NUTRITION IN NATIONAL DEFENSE

Two Years' Experience in a Nutrition Program for National Defense. FREDERICK F. TISDALL, M.D.

Marshalling Our Resources for Better Nutrition of the Civilian Population. HELEN S. MITCHELL, PH.D.

State Nutrition Program for National Defense. ANNA DEPLANTER BOWES

Working for Better Nutrition in a Rural Community. W. R. WILLARD, M.D.

Nutrition in a City Health Program. MARION H. DOUGLAS, R.N.

ENGINEERING

First Session—Room H, Convention Hall

Presiding: HARRY B. HOMMON.

Housing the Poor. CHARLES L. SENN.

Municipal Sanitation. MARTIN A. POND, M.P.H.

Discussion: GILBERT L. KELSO.

New Methods of Hookworm Disease Control. JUSTIN M. ANDREWS, SC.D.

The Work of the Sanitary Corps of the United States Army. W. A. HARDENBERGH.

Revision of the Drinking Water Standards. J. K. HOSKINS, C.E.

TUESDAY, 2:30 P.M.

PUBLIC HEALTH EDUCATION

First Session—Room C, Convention Hall

Presiding: THOMAS G. HULL, PH.D.

HEALTH EDUCATION APPRAISAL

Health Education: An Appraisal. DONALD B. ARMSTRONG, M.D.

South of the Rio Grande:

Health Education in Mexico. ANGEL DE LA GARZA BRITO, M.D.

Observations on a Recent Trip. MARY E. MURPHY.

The Modern Public Opinion Poll—A Means of Defining and Appraising Community Health Education Problems. PAUL D. GUERNSEY.

TUESDAY, 8:30 P.M.

FIRST GENERAL SESSION

Ball Room, Convention Hall

Presiding: W. S. LEATHERS, M.D., *President,* American Public Health Association.

Addresses of Welcome—Introductions by the Chairman of the Local Committee, HONORABLE THOMAS D. TAGGART, JR.

Presidential Address. JOHN L. RICE, M.D., *President-elect,* American Public Health Association.

Address. THE RIGHT HONORABLE MALCOLM MACDONALD.

Announcement of Sedgwick Memorial Medal Award.

Reception to the President and President-elect.

Dancing.

WEDNESDAY, 8:00 A.M.

AMERICAN SCHOOL HEALTH ASSOCIATION

Breakfast Session—Room C, Hotel Chelsea

Presiding: A. O. DEWEESE, M.D.

Section on School Hygiene in the American Public Health Association.

Discussion Leader: CHARLES H. KEENE, M.D.

HARVARD UNIVERSITY ALUMNI

Breakfast Session—Submarine Grill, Hotel Traymore

WEDNESDAY, 8:00 A.M.

JOHNS HOPKINS UNIVERSITY ALUMNI

Breakfast Session—Rose Room, Hotel Traymore

YALE UNIVERSITY ALUMNI

Breakfast Session—Belvedere Room, Hotel Traymore

WEDNESDAY, 9:30 A.M.

LABORATORY AND EPIDEMIOLOGY SECTIONS

Second Joint Session—Room H, Convention Hall

Presiding: ELLIOTT S. ROBINSON, M.D., and JOHN A. FERRELL, M.D.

Recent Studies in Influenza. FRANK L. HORSFALL, JR., M.D.

Epidemiological Observations in the Halifax Epidemic. STAFFORD M. WHEELER, M.D.

Contagious Diseases in Adult Groups. G. D. W. CAMERON, M.D.

Epidemiological Observations in War-Time London.. JOHN E. GORDON, M.D.

LABORATORY AND ENGINEERING SECTIONS

Joint Session—Room A, Convention Hall

Presiding: JAMES GIBBARD and HARRY B. HOMMON.

Report of the Standard Methods Committee on Examination of Water and Sewage. *Chairman,* W. L. MALLMANN, PH.D.

Report of the Standard Methods Committee on Examination of Shellfish. *Chairman,* JAMES GIBBARD.

Methods for the Examination of Shellfish and Shellfish Producing Waters. LESLIE A. SANDHOLZER, PH.D.

Studies on Aberrant Coliform Bacteria. LELAND W. PARR, PH.D., and HAROLD FRIEDLANDER.

Present Status of Tests for Organic Pollutional Loads. A. M. BUSWELL, PH.D.

Stabilization of Chlorine in Water. JOHN E. MILLER, W. L. MALLMANN, PH.D., and E. D. DEVEREAUX.

Bubbling Drinking Fountains. LIEUTENANT COLONEL A. PARKER HITCHENS, M.D., and OSCAR I. ROSENTHALL.

Mosquito Control in Impounded Waters. T. J. HEADLEE, PH.D.

WEDNESDAY, 9:30 A.M.

FOOD AND NUTRITION, AND MATERNAL AND CHILD HEALTH SECTIONS, AND AMERICAN SCHOOL HEALTH ASSOCIATION

First Joint Session—Room F, Convention Hall

Presiding: A. C. HUNTER, PH.D., ESTELLA FORD WARNER, M.D., and AMOS L. BEAGHLER, M.D.

PLANNING THE NUTRITION CONTENT OF A SCHOOL HEALTH PROGRAM IN A RURAL AREA

Discussion Panel:

The School Medical Coördinator for the State. GEORGE M. WHEATLEY, M.D.

County Superintendent of Schools. CALVIN SMITH.

County Health Officer. PAUL R. ENSIGN, M.D.

County Nurse. OPAL REAGAN, R.N.

Representative of the County Medical Society. J. LOUIS NEFF.

State Nutritionist from the Maternal and Child Health Division of the State Health Department. CATHERINE LEAMY.

Home Demonstration Agent of the United States Department of Agriculture. MARIE DOERMANN.

County Red Cross Executive Secretary and Representative of the Welfare Department. MARGARET LEWIS.

Classroom Teacher. FLORENCE C. O'NEILL.

HEALTH OFFICERS AND PUBLIC HEALTH EDUCATION SECTIONS

Joint Session—Room E, Convention Hall

COMMUNITY ORGANIZATION FOR HEALTH EDUCATION

Presiding: C. E. TURNER, DR.P.H.

Discussion of the Results of the Report of the Committee by the Same Name.

Participants:

E. R. COFFEY, M.D.
JESSIE M. BIERMAN, M.D.
MAYHEW DERRYBERRY, PH.D.
IRA V. HISCOCK, SC.D.
DELBERT OBERTEUFFER, PH.D.
PHILIP L. RILEY
JOHN J. SIPPY, M.D.
HENRY F. VAUGHAN, DR.P.H.
HAROLD H. WALKER, PH.D.

WEDNESDAY, 9:30 A.M.

PUBLIC HEALTH NURSING

First Session—Room D, Convention Hall

Presiding: RUTH HOULTON, R.N.

Report of the Committee on Membership. *Chairman,* NAOMI DEUTSCH, R.N.

Report of the Committee to Study Duties of Nurses in Industry. *Chairman,* OLIVE WHITLOCK, R.N.

Report of the Committee to Study Relationships Between Official and Nonofficial Agencies. *Chairman,* JULIA L. GROSCOP, R.N.

Section Business.

Reports of Activities of A.P.H.A. Committees on which the Public Health Nursing Section has representation:

Administrative Practice. MARION W. SHEAHAN, R.N.

Professional Education. PEARL MCIVER, R.N.

Eligibility. AGNES J. MARTIN, R.N.

Research and Standards. MARGARET G. ARNSTEIN, R.N.

Nominating Committee for Governing Council Members. MARIAN G. RANDALL, R.N.

VITAL STATISTICS

First Session—Room G, Convention Hall

Presiding: R. N. WHITFIELD, M.D.

Section Business.

Report of the Committee on Accident Statistics. *Chairman,* ROBERT J. VANE.

Report of the Committee to Revise the Committees on Forms and Methods of Statistical Practice and Utilization of Vital Statistics Data During the 1940 Census Period. *Chairman,* SELWYN D. COLLINS, PH.D.

Report of Committee for the Study of Methods of Estimating Population. *Chairman,* J. V. DEPORTE, PH.D.

Report of the Committee on Master Plans for WPA Projects. *Chairman,* HALBERT L. DUNN, M.D.

Willingness of Individuals to Be Examined for Tuberculosis. GAIUS E. HARMON, M.D.

Discussion: GODIAS J. DROLET.

The Identification of Unknown Dead. WILLIAM C. WELLING.

Discussion: WALTER R. SCOTT.

WEDNESDAY, 9:30 A.M.

INDUSTRIAL HYGIENE

Second Session—Room C, Convention Hall

Relationship of Industrial Visual Defect to Efficiency of Production in Defense Effort. HEDWIG S. KUHN, M.D.

Blood Lead Determinations as a Health Department Laboratory Service. JOHN M. MCDONALD, M.D., and EMANUEL KAPLAN, Sc.D.

The Comparison of Methods for the Determination of Carbon Monoxide in Air. F. H. GOLDMAN, PH.D., and ALLEN D. BRANDT, Sc.D.

Health and Working Environment of Non-Ferrous Metal Mine Workers. WALDEMAR C. DREESSEN, M.D., RICHARD T. PAGE and HUGH P. BRINTON, PH.D.

WEDNESDAY, 11:30 A.M.

THE STAKE OF PUBLIC HEALTH IN THE NEW SOCIAL WELFARE

Second General Session—Ball Room, Convention Hall

Presiding: SELSKAR GUNN, *Vice-President,* American Public Health Association.

What Is Happening to Social Gains of the Last Ten Years? MARY VAN KLEECK.

The Interrelationship of Health and Welfare in the Emergency. HONORABLE WILLIAM J. ELLIS.

WEDNESDAY, 12:30 P.M.

INDUSTRIAL HYGIENE

Luncheon Session—Stratosphere Room, Hotel Traymore

Report of the Committee on Lead Poisoning. *Chairman,* ROBERT A. KEHOE, M.D.

Report of the Committee on Pneumoconiosis. *Chairman,* R. R. SAYERS, M.D.

Report of the Committee on Industrial Anthrax. *Chairman,* HENRY FIELD SMYTH, M.D.

Report of the Committee on Standard Methods for the Examination of Air. *Chairman,* EMERY R. HAYHURST, M.D.

Report of the Subcommittee on Chemical Procedures. *Chairman,* F. H. GOLDMAN, PH.D.

Report of the Subcommittee on Physical Procedures. *Chairman,* CONSTANTIN P. YAGLOU.

Report of the Subcommittee on Bacteriological Procedures. *Chairman,* WILLIAM F. WELLS.

WEDNESDAY, 12:30 P.M.

AMERICAN SCHOOL HEALTH ASSOCIATION

Luncheon Session—Como Hall, Hotel Chelsea

Presiding: HAROLD H. MITCHELL, M.D.

Nutritional Studies. CARROLL E. PALMER, M.D.

Discussion. WILLIAM G. SCHMIDT, M.D.

DELTA OMEGA

Luncheon Session—Rose Room, Hotel Traymore

ORAL HEALTH GROUP

Luncheon Session—Belvedere Room, Hotel Traymore

How Important Is the Dental Health Program? Nationally? Locally? IRA V. HISCOCK, SC.D.

WEDNESDAY, 2:30 P.M.

HEALTH OFFICERS

Second Session—Room D, Convention Hall

SYMPOSIUM ON CANCER

Cancer as a Public Health Problem. EARLE G. BROWN, M.D.

Present Status of Treatment of Cancer. SHIELDS WARREN, M.D.

Present Status of Research in Cancer. CARL VOEGTLIN, PH.D.

Present Status of State Cancer Control Programs. L. A. SCHEELE, M.D.

PUBLIC HEALTH EDUCATION SECTION AND AMERICAN SCHOOL HEALTH ASSOCIATION

Joint Session—Room C, Convention Hall

Presiding: JOHN SUNDWALL, M.D.

SCHOOL HEALTH INFORMATION, PLEASE?

Chairman: ARTHUR R. TURNER, M.D.

Board of Experts:
SALLY LUCAS JEAN, Administration
CHARLES C. WILSON, M.D., Physical Education
EARL E. KLEINSCHMIDT, M.D., Health Service
ALICE V. KELIHER, PH.D., Health Instruction (city)
RUTH E. GROUT, PH.D., Health Instruction (rural)
W. CARSON RYAN, PH.D., Mental Hygiene

WEDNESDAY, 2:30 P.M.

LABORATORY

Third Session—Room E, Convention Hall

Section Business.

AN OPEN MEETING OF THE STANDARD METHODS COMMITTEE ON DIAGNOSTIC PROCEDURES AND REAGENTS

Presiding: WILLIAM D. STOVALL, M.D., *Chairman.*

Gonorrhea and the Gonococcus. CHARLES M. CARPENTER, M.D.

Laboratory Diagnosis of Diphtheria. MARTIN FROBISHER, JR., SC.D.

Laboratory Diagnosis of Rabies. THOMAS F. SELLERS, M.D.

Laboratory Methods for the Diagnosis of Fungus Diseases. WILLIAM D. STOVALL, M.D.

Meningitis and Meningococcus. SARA E. BRANHAM, M.D.

Recognition and Significance of Hemolytic Streptococci in Infectious Diseases. JULIA M. COFFEY.

Recognition of Pneumococcus Types Associated with Pneumonia. WHEELAN D. SUTLIFF, M.D.

Serological and Bacteriological Procedures in the Diagnosis of Enteric Fevers. MARION B. COLEMAN.

Serological, Bacteriological and Other Biological Procedures in the Diagnosis of Undulant Fever. LIEUTENANT COLONEL A. PARKER HITCHENS, M.D.

Serological Tests for the Diagnosis of Syphilis. RUTH GILBERT, M.D.

Studies on the Toxicity of Dyes for Bacteria. EDMUND K. KLINE, DR.P.H.

Tuberculosis and the Tubercle Bacillus. A. L. MACNABB, D.V.M.

Typhus Fever and Laboratory Methods for Its Recognition. HENRY WELCH, PH.D.

Whooping Cough and H. Pertussis. PEARL L. KENDRICK, SC.D.

INDUSTRIAL HYGIENE AND PUBLIC HEALTH NURSING SECTIONS

Joint Session—Room G, Convention Hall

Presiding: WILLIAM J. MCCONNELL, M.D., and RUTH HOULTON, R.N.

HEALTH SERVICES FOR THE SMALL PLANT

Engineering Services. JOHN BUXELL.

Medical Services. CRIT PHARRIS, M.D.

Nursing Services. RUTH M. SCOTT, R.N.

Absenteeism Follow-Up by the Nurse. MARY E. GLENN, R.N.

WEDNESDAY, 2:30 P.M.

FOOD AND NUTRITION

Second Session—Room A, Convention Hall

NUTRITION RESEARCH

Urgent Problems in Nutrition Research for National Betterment. W. H. SEBRELL, JR., M.D.

A Three Year Study on Male Children Receiving Evaporated Milk and Vitamin Supplement. TERESA FOLIN RHOADS, M.D., MILTON RAPOPORT, M.D., and JOSEPH STOKES, JR., M.D.

Biotin—A New Member of the Vitamin B Complex. VINCENT DU-VIGNEAUD, M.D.

Proteins: The Effect of Vitamins on the Biological Value of Proteins. JOHN R. MURLIN, PH.D.

Report of the Committee on Assay of Foods. *Chairman,* HENRY T. SCOTT, PH.D.

Section Business

ENGINEERING AND FOOD AND NUTRITION SECTIONS

Joint Session—Room F, Convention Hall

Presiding: HARRY B. HOMMON and A. C. HUNTER, PH.D.

SANITATION

The Sanitary Significance of the House Fly (Musca Domestica) as a Vector of Food Poisoning Organisms in Food Producing Establishments. MORRIS OSTROLENK and HENRY WELCH, PH.D.

Report of the Committee on Disinfection of Dishes and Utensils. *Chairman,* WALTER D. TIEDEMAN, M.C.E.

Discussion: GEORGE J. HUCKER, PH.D., *Chairman,* Committee on Food Utensil Sanitation.

U. S. Public Health Service Restaurant Sanitation Program. A. W. FUCHS, C.E.

The Sanitation and Bacteriology of Public Eating Utensils. MURRAY P. HORWOOD, PH.D., and P. J. PESARE, C.P.H.

Food Establishment Sanitation in a Municipality. FERDINAND A. KORFF.

EPIDEMIOLOGY

Second Session—Room H, Convention Hall

SYMPOSIUM ON SYPHILIS

The Epidemiology of Syphilis Based Upon Five Years' Experience in an Intensive Program in New York State. W. A. BRUMFIELD, JR., M.D., JAMES H. LADE, M.D., and LOUIS FELDMAN.

WEDNESDAY, 2:30 P.M.

EPIDEMIOLOGY (Cont.)

Second Session—Room H, Convention Hall

Study of the Prevalence of Syphilis in the Eastern Health District Based on Specific Age Groups of an Enumerated Population. E. GURNEY CLARK, M.D., and THOMAS B. TURNER, M.D.

Epidemiological Problems Associated with the Rapid Intensive Treatment of Early Syphilis. EVAN W. THOMAS, M.D.

Venereal Disease Problems in National Defense Areas. FRANCIS J. WEBER, M.D.

Epidemiological Methods Used in the Control of Venereal Diseases in New York City. THEODORE ROSENTHAL, M.D., and HERMAN GOODMAN, M.D.

Syphilis in Alabama as Revealed by a Serologic Survey of Selective Service Registrants. D. G. GILL, M.B., D.P.H., W. H. Y. SMITH, M.D., and S. R. DAMON, PH.D.

WEDNESDAY, 6:30 P.M.

ENGINEERING SECTION, CONFERENCE OF STATE SANITARY ENGINEERS, AND CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Annual Engineers' Stag Dinner—Rose Room, Hotel Traymore

PNEUMONIA CONTROL OFFICERS

Dinner Session—Stratosphere Room, Hotel Traymore

PUBLIC HEALTH EDUCATION

Dinner Session—Belvedere Room, Hotel Traymore

Section Business.

Report of the Committee on School Health Policies. *Chairman,* EDNA A. GERKEN, C.P.H.

Report of the Committee for the Study of State Administration of Public Health Education. *Chairman,* BURT R. RICKARDS.

Report of the Committee on Coördination of Activities. *Chairman,* CARL A. WILZBACH, M.D.

Report of the Committee on Community Organization for Health Education. *Chairman,* C. E. TURNER, DR.P.H.

Report of the Committee to Study the Work of the Section. *Chairman,* DAVID B. TREAT.

"Credit Lines" Department of the American Journal of Public Health. DONALD B. ARMSTRONG, M.D., and JOHN LENTZ.

THURSDAY, 8:00 A.M.

AMEROPS

Breakfast Session—Chippendale Room, Hotel Traymore

AMERICAN SCHOOL HEALTH ASSOCIATION

Breakfast Session—Room C, Hotel Chelsea

Presiding: AMOS L. BEAGHLER, M.D., President.

Committee Reports:
Tuberculosis
Professional Education
Physical Fitness
Nominating
Summary

GEORGE PEABODY COLLEGE FOR TEACHERS ALUMNAE

Breakfast Session—Submarine Grill, Hotel Traymore

MASSACHUSETTS INSTITUTE OF TECHNOLOGY ALUMNI

Breakfast Session—Belvedere Room, Hotel Traymore

UNIVERSITY OF MICHIGAN ALUMNI

Breakfast Session—Rose Room, Hotel Traymore

THURSDAY, 9:30 A.M.

FOOD AND NUTRITION

Third Session—Room H, Convention Hall

METALS

Public Health Relationships of Acute and Chronic Toxicity. FLOYD DEEDS, PH.D.

Methyl Bromide as a Fumigant for Foods. H. C. DUDLEY, PH.D., and PAUL A. NEAL, M.D.

Aluminum in Foods. GERALD J. COX, PH.D.

Trace Elements in Foods. H. O. CALVERY, PH.D.

An Outbreak of Fluoride Poisoning. HOLLIS S. INGRAHAM, M.D., and ANTHONY J. FLOOD, M.D.

THURSDAY, 9:30 A.M.

LABORATORY

Fourth Session—Committee Room 11, Convention Hall

Immunological Reactions in Rickettsial Diseases with Special Reference to the Time of Appearance of Antibodies. FLORENCE K. FITZPATRICK and BETTYLEE HAMPIL, SC.D.

Complement-Fixation in Rickettsial Diseases. IDA A. BENGTSON, PH.D., and NORMAN H. TOPPING, M.D.

Experimental Studies on Treatment of Wounds in Rabies. HOWARD J. SHAUGHNESSY, PH.D., and JOSEPH ZICHIS, PH.D.

Some Problems in the Diagnosis of Rabies. WILLIAM D. STOVALL, M.D.

Studies on the Single Injection Method of Canine Rabies Vaccination. HARALD N. JOHNSON, M.D., and CHARLES N. LEACH, M.D.

An Improved Non-Virulent Rabies Vaccine. LESLIE T. WEBSTER, M.D., and J. CASALS, M.D.

LABORATORY

Fifth Session—Room G, Convention Hall

Presiding: JAMES GIBBARD.

Identification of Bovine Mastitis Streptococci by Serological Methods. WAYNE N. PLASTRIDGE, PH.D.

The Use of Laboratory Pasteurization in Solving Milk Problems. ELIAS B. BOYCE.

Bacteriological Indices of Quality of Market Cream. ELIZABETH D. ROBINTON, EARLE K. BORMAN, and FRIEND LEE MICKLE, SC.D.

Experiences with Scharer's Test for the Efficiency of Pasteurization. J. WYLLIE, M.B., D.P.H.

Methods for Determining the Sanitary Quality of Butter. H. C. OLSON, PH.D.

ENGINEERING SECTION AND NEW JERSEY SECTION OF THE AMERICAN WATER WORKS ASSOCIATION

First Joint Session—Room C, Convention Hall

Presiding: HARRY B. HOMMON.

Water Demands and Sewage Production in Military Cantonments. S. M. ELLSWORTH.

Sewage Disposal Problems at Army Camps. PAUL HANSEN.

Informal Report. Recent Activities and Findings of the National Technological Civil Protection Committee. ABEL WOLMAN, DR.ENG.

Viability and Destruction of Endamoeba Histolytica. S. L. CHANG, M.D.

The Occurrence and Recovery of the Virus of Infantile Paralysis from Water. JOHN R. PAUL, M.D., and JAMES D. TRASK, M.D.

THURSDAY, 9:30 A.M.

HEALTH OFFICERS

Third Session—Room E, Convention Hall

Presiding: MAJOR F. ADAMS, M.B., D.P.H.

The Cost of Various Phases of Public Health Service. W. F. WALKER, DR.P.H., F. J. UNDERWOOD, M.D., and W. C. WILLIAMS, M.D.

Adaptation of Public Health Programs to Defense Needs. JOSEPH W. MOUNTIN, M.D.

Housing as a Health Officer's Opportunity. HUNTINGTON WILLIAMS, M.D.

The Control of Communicable Diseases. HAVEN EMERSON, M.D.

Syphilis and Gonorrhea in New Jersey Draftees. DANIEL BERGSMA, M.D.

Improving Local Health Programs through the Health Conservation Contest. L. VAN D. CHANDLER.

VITAL STATISTICS AND EPIDEMIOLOGY SECTIONS

Joint Session—Room D, Convention Hall

Presiding: R. N. WHITFIELD, M.D., and JOHN A. FERRELL, M.D.

FAMILY STUDIES

The Index Person in Family Studies. LOWELL J. REED, PH.D.

The Health Officer and the Family. GEORGE H. RAMSEY, M.D.

The Importance of Chronic Disease in Family Studies of Illness. JEAN DOWNES.

Use of the Index Case in the Study of Tuberculosis in Williamson County, Tennessee. RUTH R. PUFFER, JAMES A. DOULL, M.D., WILLIAM J. MURPHY, M.D., R. S. GASS, M.D., and W. C. WILLIAMS, M.D.

Discussion. HOWARD C. STEWART, M.D., and JAMES A. DOULL, M.D.

PUBLIC HEALTH EDUCATION SECTION AND THE COMMITTEE ON THE HYGIENE OF HOUSING

Joint Session—Room F, Convention Hall

Presiding: ABEL WOLMAN, DR.ENG.

WHAT CAN WE, AS HEALTH EDUCATORS, TELL THE PUBLIC NOW ABOUT HEALTHFUL HOUSING?

Participants:
Rollo H. Britten
BLEECKER MARQUETTE
GLADYS A. LAFETRA
HUNTINGTON WILLIAMS, M.D.

THURSDAY, 9:30 A.M.

PUBLIC HEALTH NURSING

Second Session—Room B, Convention Hall

Public Health Nursing in National Defense. KATHARINE TUCKER, R.N.

Discussion.

Inducting Personnel into the Defense Program. Speaker to be announced.

Doing Public Health Nursing in a Defense Area. Speaker to be announced.

Discussion.

INDUSTRIAL HYGIENE

Third Session—Room A, Convention Hall

The Toxicity of Toluene and the Mechanism of Its Action. WOLFGANG F. VON OETTINGEN, M.D., PAUL A. NEAL, M.D., and DENNIS D. DONAHUE, SC.D.

Toluol—A Study of Its Toxicity. LEONARD GREENBURG, M.D., MAY R. MAYERS, M.D., HARRY HEIMANN, M.D., and SAMUEL MOSKOWITZ, PH.D.

Methanol Poisoning. I. Exposure of Dogs to 500 p.p.m. Methanol Vapor in Air. R. R. SAYERS, M.D., WILLIAM P. YANT, and HELMUTH H. SCHRENK, PH.D.

THURSDAY, 12:30 P.M.

FOOD AND NUTRITION

Luncheon Session—Submarine Grill, Hotel Traymore

Report of the Committee on Microbiological Examination of Foods. *Chairman,* HARRY E. GORESLINE, PH.D.

Report of the Committee on Foods (Except Milk). *Chairman,* BERNARD E. PROCTOR, PH.D.

Report of the Committee on Membership and Fellowship. *Chairman,* ABRAHAM LICHTERMAN, PHAR.D.

Report of the Coördinating Committee. *Chairman,* F. C. BLANCK, PH.D.

Report of the Committee on Food Utensil Sanitation. *Chairman,* GEORGE J. HUCKER, PH.D.

COMMITTEE ON PROFESSIONAL EDUCATION

Luncheon Session—Rose Room, Hotel Traymore

Program to be announced.

THURSDAY, 2:00 P.M.

CONFERENCE OF STATE DIRECTORS OF LOCAL HEALTH SERVICES

Stratosphere Room, Hotel Traymore

THURSDAY, 7:00 P.M.

THIRD GENERAL SESSION

Annual Banquet—Grand Ball Room, Hotel Traymore

Presiding: W. S. LEATHERS, M.D., *President,* American Public Health Association.

Presentation of Forty Year Membership Certificates.

Announcement of Health Conservation Contest Awards.

Entertainment.

Dancing.

FRIDAY, 9:30 A.M.

HEALTH OFFICERS

Fourth Session—Room E, Convention Hall

CLINIC ON ADMINISTRATIVE TECHNICS IN LOCAL HEALTH PROGRAMS

An informal discussion to which all are invited and in which anyone may participate

Presiding: EARLE G. BROWN, M.D.

Interlocutor: ABEL WOLMAN, DR.ENG.

Referee: W. F. WALKER, DR.P.H.

Methods and Technics Used in the Development of Full-time Rural Health Service in Canada. C. J. W. BECKWITH, M.D.

Why My Program of Maternity Hygiene Is More Effective than the Average Program. EARL P. BOWERMAN, M.D.

The Technics Which Make Our Venereal Disease Control Program Click. R. K. WILSON, M.D.

The Little, but Different Things We Do Which Seem to Make Our Tuberculosis Control Program Successful. SUE H. THOMPSON, M.D.

How to Organize and Conduct a Program of Public Health Dentistry Which Will Actually Reach Children of Preschool Age. LEON R. KRAMER, D.D.S.

How to Increase Local Appropriations for Local Public Health Work. CHARLES D. CAWOOD, M.D.

Why I Am Proud of Our Plan for Milk Control and Supervision. ARTHUR H. WILLIAMSON, D.V.M.

FRIDAY, 9:30 A.M.

LABORATORY

Sixth Session—Room D, Convention Hall

Presiding: JAMES GIBBARD.

Antigenic Structure of H. Pertussis and Clinical Significance. EARL W. FLOSDORF, PH.D., and AIMES C. MCGINNESS, M.D.

The Nasopharyngeal Swab in the Diagnosis of Pertussis. T. M. SAITO and JOHN J. MILLER, JR., M.D.

The Use of Alum Treated Pertussis Vaccine and of Alum Precipitated Combined Diphtheria Toxoid and Pertussis Vaccine for Active Immunization. PEARL L. KENDRICK, SC.D.

Simultaneous Administration of Diphtheria Toxoid and Pertussis Vaccine in Young Children. LOUIS W. SAUER, M.D., and WINSTON H. TUCKER, M.D.

Synthetic Medium for Differentiation of Salmonella, Klebsiella and Neisserian Organisms. SARA A. SCUDDER.

Study of Atypical Enteric Organisms of the Shigella Group. ELIZABETH J. COPE and KEITH KILANDER.

FOOD AND NUTRITION AND LABORATORY SECTIONS

Joint Session—Room B, Convention Hall

Presiding: A. C. HUNTER, PH.D., and ELLIOTT S. ROBINSON, M.D.

Report of the Standard Methods Committee on Examination of Dairy Products. *Chairman,* ROBERT S. BREED, PH.D.

Report of the Standard Methods Joint Committee on Analyzing Frozen Desserts and Ingredients. *Chairman,* FRIEND LEE MICKLE, SC.D., and *Chairman,* FREDERICK W. FABIAN, PH.D.

Rôle of Acid Cleaners in Dairy Sanitation. MILTON E. PARKER.

Administrative Public Health Problems in Milk and Milk Products. LLOYD ARNOLD, M.D.

Quality Control in the Manufacture of Butter. B. W. HAMMER, PH.D.

ENGINEERING

Second Session—Room G, Convention Hall

Decomposition of Land Fill Material. ROLF ELIASON.

Weeds, Waste and Hay Fever. R. P. WODEHOUSE, PH.D.

The Time Factor in Chlorine and Chloramine Disinfection of Contaminated Swimming Pool Waters. EMIL T. CHANLETT and HAROLD B. GOTAAS.

FRIDAY, 9:30 A.M.

VITAL STATISTICS

Second Session—Room A, Convention Hall

The Use of Vital Records in the Reduction of Fetal, Infant and Maternal Mortality. THOMAS J. DUFFIELD.

Discussion: JACOB YERUSHALMY, PH.D.

Evaluation of State Vital Statistics Reports. W. THURBER FALES, SC.D.

Discussion: JOHN H. WATKINS, PH.D., and THOMAS W. CHAMBERLAIN.

Put Your Accident Information to Work. W. G. JOHNSON.

Discussion: ROBERT J. VANE.

Error in Death Statistics (based on 20,000 clinical and post-mortem records). HAVEN EMERSON, M.D., and KURT POHLEN, PH.D.

Discussion: EDWIN L. CROSBY, M.D., and EDWIN B. WILSON, PH.D.

INDUSTRIAL HYGIENE

Fourth Session—Room C, Convention Hall

Mental Hygiene in Industry. LYDIA G. GIBERSON, M.D.

Workers' Health Education. ELIZABETH G. PRITCHARD.

The Relationship of Vocational Rehabilitation to Industrial Hygiene. DAVID AMATO.

FOOD AND NUTRITION AND MATERNAL AND CHILD HEALTH SECTIONS AND THE ORAL HEALTH GROUP

Joint Session—Room F, Convention Hall

Presiding: A. C. HUNTER, PH.D., ESTELLA FORD WARNER, M.D., and J. M. WISAN, D.D.S.

NUTRITION AND MATERNAL HEALTH

Review of Present-Day Knowledge of Nutrition in Relation to Pregnancy and Lactation. HUGH J. BICKERSTAFF, M.D., NICHOLSON J. EASTMAN, M.D., and ERNESTINE BECKER.

Improving Maternal Health Through Diet. J. HARRY EBBS, M.D.

Effect of Nutrition During Pregnancy on Dental Health of Young Children. FRANCES KRASNOW, PH.D.

Education in Nutrition as Part of the Maternal Health Program. HESTER B. CURTIS, M.D., and CHRISTINE A. HELLER.

Report of the Committee on Nutritional Problems. *Chairman,* MARJORIE M. HESELTINE.

FRIDAY, 9:30 A.M.

EPIDEMIOLOGY

Third Session—Room H, Convention Hall

A Rural Outbreak of Poliomyelitis: The Incidence of Minor Illnesses in the Community and Virus Infection Among Contacts. ALEXANDER D. LANGMUIR, M.D.

A Nutrition Survey of a Small North Carolina Community. D. F. MILAM, M.D.

Effect of New Type of Chemotherapeutic Agent on Experimental and Human Malaria. L. T. COGGESHALL, M.D., and JOHN MAIER, M.D.

Epidemiology of Cancer in the United States and Abroad. S. PELLER, M.D.

A Mock Epidemic of Typhoid Fever Used in Public Health Training. GEORGE B. DARLING, DR.P.H., and LIEUTENANT COLONEL LEON A. FOX, M.D.

AMERICAN SCHOOL HEALTH ASSOCIATION

Second General Session—Convention Hall

ROUND TABLES

Committee Room 1, Convention Hall

Objectives and Scope of a School Health Program in a Rural Area. E. R. SHAFFER, M.D., and REBA F. HARRIS.

Committee Room 2, Convention Hall

Physical Fitness—How Can It Be Attained? CHARLES H. KEENE, M.D.

Committee Room 3, Convention Hall

School Health Examinations—Their Scope and Content. HENRY R. O'BRIEN, M.D., and J. E. BURKE, M.D.

Committee Room 4, Convention Hall

In-Service Training for School Health Personnel. HAROLD H. MITCHELL, M.D., and CHARLES E. SHEPARD, M.D.

Committee Room 5, Convention Hall

School Nursing Relationships. ROSE J. JIRINEC, M.D., and GERTRUDE E. CROMWELL, R.N.

FRIDAY, 11:30 A.M.

PUBLIC HEALTH IN GREAT BRITAIN—RECENT OBSERVATIONS

Fourth General Session—Ball Room, Convention Hall

Presiding: W. S. LEATHERS, M.D., *President,* American Public Health Association.

Address. MARTHA M. ELIOT, M.D.

Address. THOMAS PARRAN, M.D.

FRIDAY, 12:30 P.M.

NATIONAL ORGANIZATION FOR PUBLIC HEALTH NURSING

Luncheon Session—Rose Room, Hotel Traymore

NATIONAL COMMITTEE OF HEALTH COUNCIL EXECUTIVES

Luncheon Session—Mandarin Room, Hotel Traymore

FRIDAY, 2:30 P.M.

PUBLIC HEALTH NURSING SECTION AND NEW JERSEY STATE ORGANIZATION FOR PUBLIC HEALTH NURSING

Joint Session—Room E, Convention Hall

Presiding: RUTH HOULTON, R.N.

How the Public Health Nurse Spends Her Time. FRANCES F. HAGAR, R.N.

"TOWN MEETING"

What Progress Has Been Made in the Coördination of Community Public and Private Agencies?

Chairman of Discussion: ALMA C. HAUPT, R.N.

Advances Since the National Organization for Public Health Nursing Survey of 1934. DOROTHY DEMING, R.N.

Discussion.

FOOD AND NUTRITION AND MATERNAL AND CHILD HEALTH SECTIONS AND THE AMERICAN SCHOOL HEALTH ASSOCIATION

Second Joint Session—Room D, Convention Hall

Presiding: A. C. HUNTER, PH.D., ESTELLA FORD WARNER, M.D., and AMOS L. BEAGHLER, M.D.

SCHOOL NUTRITION AND BETTERMENT

Shall Public Health Physicians Attempt to Assess Nutritional Status of School Children? SUSAN SOUTHER, M.D.

A Nutrition Demonstration as a Tool for Teacher Training. WALTER WILKINS, M.D., and FRENCH BOYD.

The Functioning School Lunch. MARTHA KOEHNE, PH.D.

The School Health Administrator Looks at the School Lunch Room. ARTHUR R. TURNER, M.D.

FRIDAY, 2:30 P.M.

LABORATORY

Seventh Session—Room C, Convention Hall

Epidemic Influenza. Epidemiological, Clinical and Laboratory Aspects of 1940–1941 Outbreak in St. Louis. S. EDWARD SULKIN, PH.D., JOSEPH F. BREDECK, M.D., and D. DAVID DOUGLASS.

Influenza in Detroit, 1941. A Report on the Clinical, Epidemiological and Laboratory Findings. F. H. TOP, M.D., and FRED STIMPERT, PH.D.

Chorio-Allantoic Membrane Infection as a Diagnostic Test for Smallpox. S. W. BOHLS, M.D., and J. V. IRONS, SC.D.

New Aids to the Diagnosis and Epidemiology of Lymphogranuloma Venereum. MORRIS F. SHAFFER, PH.D., and GEOFFREY RAKE, M.B.

LABORATORY AND EPIDEMIOLOGY SECTIONS

Third Joint Session—Room G, Convention Hall

Presiding: ELLIOTT S. ROBINSON, M.D., and JOHN A. FERRELL, M.D.

The Occurrence of Leptospiral Infections in the United States. W. W. STILES, M.D., and GEORGE PACKER BERRY, M.D.

Results of Serologic Tests for Syphilis in Non-syphilitic Persons Inoculated with Malaria. L. E. BURNEY, M.D., J. R. S. MAYS and ALBERT ISKRANT.

Diphtheria Immunization with Fluid Toxoid and Alum Precipitated Toxoid. V. K. VOLK, M.D., and W. E. BUNNEY, PH.D.

Reimmunization of Previously Immunized Children. V. K. VOLK, M.D., and W. E. BUNNEY, PH.D.

Summary of Studies of Diphtheria Bacilli in the United States. MARTIN FROBISHER, JR., SC.D.

Discussion: DONALD T. FRASER, M.B., D.P.H.

ENGINEERING SECTION AND THE NEW JERSEY SECTION OF THE AMERICAN WATER WORKS ASSOCIATION

Second Joint Session—Room F, Convention Hall

THE TECHNICAL EXHIBITS

CONVENTION HALL

EXHIBITORS in the Twenty-Third Health Exhibit, sponsored by the American Public Health Association in connection with its 70th Annual Meeting, describe the exhibits they are preparing for the information of delegates as follows:

ALBA PHARMACEUTICAL COMPANY, INC.

NEW YORK, N. Y. No. 206

ROCCAL, formerly known as ZEPHIRAN INDUSTRIAL, has continued to prove its worth as a sanitizing agent of public eating and drinking utensils. In addition, new applications have been found and are being studied by Public Health Departments throughout the country, for this tasteless, odorless and non-corrosive bactericidal agent in different fields. ROCCAL is a mixture of high molecular alkyl-dimethyl-benzyl-ammonium chlorides. The product is extremely stable in the presence of organic matter. Samples and literature will be available at the booth.

A. S. ALOE COMPANY

ST. LOUIS, MO. NOS. 221 AND 223

NEW AND RECENT LABORATORY DEVICES

A complete display of new and recent apparatus for the public health laboratory. New serological water baths for the Kahn Verification Test will be shown as well as additional new equipment of interest to the serologist. New models of spectrophotometers and fluorometers will be demonstrated especially as adapted to vitamins and general analytical procedures. Miscellaneous new items of interest to the public health physician and nurse will also be displayed and demonstrated.

AMERICAN CAN COMPANY

NEW YORK, N. Y. NOS. 418 AND 420

Convention delegates are invited to visit Booths 418 and 420 where information is available concerning those aspects of commercially canned foods which are of particular interest to members of the American Public Health Association. The American Can Company's modern, single-service, paper milk container will also be featured. Those who visit the American Can Company's booth will receive an attractive souvenir of the Convention.

AMERICAN HOSPITAL SUPPLY CORPORATION

CHICAGO, ILL. No. 401

The American Iron Lung, an improved respirator, is to be displayed by the American Hospital Supply Corporation. Health Department representatives interested in respiration equipment will find new features in the design of the American Iron Lung which overcome the main objections to former type respirators. Pleasing appearance with maximum comfort to the patient recommends the American Iron Lung for community use. Be sure to examine this modern respirator.

A complete exhibit of Baxter products for blood transfusions, banking, and preparation of blood plasma will be displayed. The modern blood bank is a simple undertaking with Baxter Transfuso-Vacs, Centri-Vacs, and Plasma-Vaos.

AMERICAN INSTRUMENT COMPANY

SILVER SPRING, MD. No. 410

At the exhibit of the American Instrument Company there will be displayed the following: Fermentometers, Fluorophotometers, Spectrophotometers, Absorption Cells, pH Apparatus, Manometric Apparatus for Micro-respiration Studies, Serological Baths, Test Tube Racks, Incubators, Anaerobic Culture Apparatus, Automatic Pipetting Machines, Colony Counters, Constant Temperature Baths and Equipment and other items of interest to public health workers and officials.

AMERICAN JOURNAL OF NURSING

NEW YORK, N. Y. No. 116

The AMERICAN JOURNAL OF NURSING, official publication of the American Nurses Association, and the National League of Nursing Education, serves nurses throughout the world. It recognizes the interdependence of all health workers. Many public health nurses call it "indispensable," while thousands of others say, "I could never carry on in my work without the Journal."

THE BORDEN COMPANY

NEW YORK, N. Y. No. 413

The Borden Company exhibit will give a graphic portrayal of "The Cost Story Behind A Bottle of Milk." By means of a cleverly illuminated series of illustrated panels, the answers to the ever pertinent question of where the milk dollar goes are presented.

CARNATION COMPANY

OCONOMOWOC, WIS. NOS. 300 AND 302

Don't miss the interesting and unique display at Booth Nos. 300 and 302. You will see a quick, complete and highly dramatic presentation of the story of Carnation Quality. Every operation in the processing of Irradiated Carnation Milk—from farm to finished product—is performed right before your eyes. You will enjoy this personally conducted tour through a Carnation evaporating plant.

CHURCH & DWIGHT CO., INC.

NEW YORK, N. Y. No. 307

Church & Dwight Co., Inc. will exhibit Arm & Hammer and Cow Brand Baking Soda in Booth No. 307. In 1846 this Company pioneered in first producing bicarbonate of soda in the Western Hemisphere. This year attendants will demonstrate its value as a tooth powder in cleaning the teeth. Arm & Hammer Bicarbonate of Soda is listed as an acceptable dentifrice by the American Dental Association.

CINCHONA PRODUCTS INSTITUTE, INC.

NEW YORK, N. Y. No. 200

Colored reproductions of malaria plasmodia and publications on the treatment

of malaria with quinine are the main feature of the Exhibit. Thin smear details of *Plasmodium vivax* (benign tertian), *P. malariae* (quartan) and *P. falciparum* (subtertian) are shown in colored enlargements. The originals were prepared under the direction of Dr. C. W. F. Winckel of Amsterdam and will be of interest to clinicians, diagnosticians and epidemiologists. Reprints of the originals, with a detailed key to them, will be available.

CLAY-ADAMS COMPANY, INC.

NEW YORK, N. Y. No. 212

The Clay-Adams Company, New York, exhibit will be in two divisions. One part will demonstrate supplies for laboratory work and will feature Angle Centrifuges as well as the regular type Centrifuges, Concavity Slides for Klein tests, American made microscope cover glasses, Slides, Slide Boxes, a new laboratory counter for a differential white cell count, new blood smear slides and other laboratory specialties.

The other part of the exhibit will be devoted to Anatomical Models, Charts, Skeletons and Obstetrical Manikins for educational work and will include the new Model Chase N Hospital Doll. Health Departments planning educational programs in your own city, state, or community will find this visual education demonstration very enlightening.

WARREN E. COLLINS, INC.

BOSTON, MASS. No. 209

Of particular interest to Public Health Administrators is the demonstration of the new Drinker-Collins Duplex Respirator which provides dependable, artificial respiration for two children simultaneously. The Duplex Respirator will be shown in operation with two life-sized models which actually breathe. Of equal interest is the General-Collins Emergency Lung for artificial respiration in cases of gas poisoning, electrical shock and drowning where treatment is required for short periods. Also, the Infant Drinker Respirator and Benedict-Roth Metabolism apparatus will be displayed. We cordially invite your inspection.

F. A. DAVIS COMPANY

PHILADELPHIA, PA. No. 416

A cordial invitation is extended to visit the F. A. Davis Company booth to examine these books: Longhurst's *Tuberculosis Nursing;* Taber's *Cyclopedic Medical Dictionary,* which includes 50,000 words, a complete discussion of drugs, first aid, physical therapy, etc.; Gage and Landon's *Communicable Diseases;* Hull, Wright, and Ely's *Medical Nursing* with its inclusion of dietary management; Galloway's *Handbook on Laboratory Technic;* Longlye's *Laboratory Manual in Bacteriology;* Woodward and Gardner's *Obstetric Management and Nursing* with its excellent section on Home Deliveries. Medical books for reference: Goldberg's *Clinical Tuberculosis;* Bethea's *Materia Medica, Drug Administration, and Prescription Writing;* Mullen's *Handbook of Treatment.*

R. B. DAVIS SALES CO.

HOBOKEN, N. J. No. 312

You are invited to enjoy a drink of delicious cocomalt at Booth 312.

Cocomalt is refreshing, nourishing and of the highest quality. It is fortified with vitamins A, B_1 and D; calcium and phosphorus to aid in the development of strong bones and sound teeth; iron for blood; protein for strength and muscle; carbohydrate for energy.

DIFCO LABORATORIES, INC.

DETROIT, MICH. No. 216

Exhibit of dehydrated culture media prepared according to the formulae of the American Public Health Association's "Standard Methods of Water Analysis" and "Standard Methods for the Examination of Dairy Products," as well as other media of particular interest in public health bacteriology.

Demonstration of Bacto- S S Agar, Bacto-MacConkey Agar and other media for isolation and identification of members of the typhoid-paratyphoid-dysentery group.

THE EATON-DIKEMAN COMPANY

MOUNT HOLLY SPRINGS, PA. No. 409

Qualitative and quantitative filter papers, folded filter papers, E & D lining paper, E & D bibulous paper and bibulous booklets, E & D filtermasse.

J. H. EMERSON COMPANY

CAMBRIDGE, MASS. No. 303

In Booth 303 will be exhibited the Emerson Resuscitator, Inhalator and Aspirator. This unit is outstanding for use in emergency field work and in hospitals for the relief of all forms of asphyxia, caused by gas or drug poisoning, suffocation, drowning, electric shock, and other similar causes. Also included in the exhibit will be the Emerson Adult Respirator, with the new Orthopedic Attachment, the newly developed Infant Respirator-Incubator combination, the Vascular Boot and the Humidox Humidifier.

EVAPORATED MILK ASSOCIATION

CHICAGO, ILL. No. 301

The Evaporated Milk Association will have on display educational materials designed for use by doctors, nurses, nutritionists, and other professional people in public health work. These publications deal with low-cost family feeding, infant care, the school lunch problem, and the preparation of food in quantity. Also available are technical publications and reprints of scientific research on the nutritive value and uses of evaporated milk.

FLORIDA CITRUS COMMISSION

LAKELAND, FLA. No. 102

The Florida Citrus Commission exhibit, modern in design and bright as Florida sunshine, will direct attention to the fact that citrus fruits are a healthful natural food, supplementing and repairing the deficiencies of the usual American diet which is notoriously poor in vitamins and mineral salts and that any dietary habit which will increase the consumption of these valuable fruits should benefit the public health. Educational literature will be available to those registering and refreshing citrus juices will be served.

THE J. B. FORD SALES COMPANY

WYANDOTTE, MICH. No. 411

Wyandotte Products are produced by the world's largest manufacturer of specialized alkalies and cleaning materials. *Wyandotte Steri-Chlor* for sterilizing and deordorizing operations. *Wyandotte Dishwashing Compounds* for hand and machine dishwashing in all kinds of water. *Wyandotte Neosuds* for glass washing. *Wyandotte Detergent* for all four kinds of maintenance cleaning. *Wyandotte Bottle Washing Materials* for washing milk and beverage bottles. Other Wyandotte Products for general cleaning in dairies, bottling plants, hospitals, hotels, schools, and public buildings are available.

GENERAL ELECTRIC X-RAY CORP.

CHICAGO, ILL. No. 505

Once again, this exhibit will feature the G-E Photo-Roentgen Unit, the unit that photographs a fluoroscopic image of the chest on a 4" by 5" film, small enough to cost but a few cents, diagnostic enough to have proven within 2% as accurate as the conventional radiograph for tuberculosis case-finding purposes. This time, you may see the new G-E Photo-Roentgen Unit, designed to make the procedure smoother and speedier and even more accurate.

GERBER PRODUCTS COMPANY

FREMONT, MICH. No. 310

The complete line of Gerber Baby Foods will be on display—dry, pre-cooked Cereal Food, fifteen Strained Foods and ten junior Foods.

A new infant cereal, Strained Oatmeal, pre-cooked, dried and flaked, will be shown for the first time.

Booklets available for distribution to mothers or patients on special diets as well as professional literature will be sent to registrants, for examination.

THE GILLILAND LABORATORIES, INC.

MARIETTA, PA. No. 415

The Gilliland Laboratories will have on display at Booth No. 415 a complete line of Biological Products. This firm gives special attention to supplying Biological Products to State, City and County Boards of Health, Hospitals and Institutions. The representative in charge of this exhibit will be pleased to answer any inquiries.

JOHN HANCOCK MUTUAL LIFE INSURANCE COMPANY

BOSTON, MASS. No. 406

Display of health posters. First of a series to be supplied periodically to industrial plants and business concerns. Available also to social and health agencies carrying on health educational projects.

HANOVIA CHEMICAL AND MANUFACTURING COMPANY

NEWARK, N. J. No. 504

HYGEIA, THE HEALTH MAGAZINE

CHICAGO, ILL. No. 407

In Booth No. 407 there will be on display copies of HYGEIA, The Health Magazine, and various books and pamphlets published by the American Medical Association. Health officers, nurses and public health workers will find in HYGEIA informative articles on such phases of health as control of epidemics, home sanitation, medical hygiene, pre-natal care, healthful recreation and kindred subjects.

INTERNATIONAL BUSINESS MACHINES CORPORATION

WASHINGTON, D. C. Nos. 118, 120, AND 122

The newest units of Electric Accounting Machines used by public health agencies will be on display at the International Business Machines Corporation exhibit.

Recent developments in their application to public health statistics, report preparation and accounting work will be demonstrated by specialists in this field.

International Electric Time Recorders and Electromatic, the All-Electric Writing Machine, will also be on display.

You are cordially invited to visit this exhibit of modern business machines and discuss your problems with our representatives.

EAM APPLICATIONS

Statistics—Complete printed statistical tables are automatically prepared from punched cards by the Alphabetical Accounting Machine. These tables include births, deaths, clinic or institution, population and activity, laboratory examinations, nursing activity, morbidity statistics and others. Among the divisions served are Vital Statistics, Epidemiology and Communicable Diseases, Nursing, Industrial Hygiene, Maternal and Child Health, Laboratories, Venereal Disease, Tuberculosis and Cancer Control, Sanitation, Dairy and Food Products and Accounting.

KELLOGG COMPANY

BATTLE CREEK, MICH. No. 516

KELLOGG'S EXHIBIT AT THE A.P.H.A. CONVENTION—1941

Kellogg's ready-to-eat cereals have an important part in the dietary program. Corn Flakes and Rice Krispies are included freely in wheat-free and low residue diets. Pep has been enriched with vitamins B_1 and D. Kellogg's other whole wheat and bran cereals—Wheat Krispies, Krumbles, Shredded Wheat, All-Bran and Bran Flakes—are rich in minerals and vitamin B, too. Reprints covering recent research with bran and nutrition will be available at the Kellogg Exhibit. Winefred B. Loggans is in charge.

LEDERLE LABORATORIES, INC.

NEW YORK, N. Y. Nos. 318, 320, AND 322

Lederle's 4-sectional display will describe by means of colored transparencies and charts the latest therapy for Pertussis, Pneumonia and Tuberculosis Case-Finding.

The first section of the Lederle exhibit will feature the strides made in conquering whooping cough through the use of "Pertussis Antigen (Detoxified) *Lederle*" supported by findings of Joslin and Christensen (December issue American Journal of Diseases of Children) . . . 94% protection with "Pertussis Antigen (Detoxified) *Lederle*."

The remarkable decrease of mortality in Pneumonia is described in Section two (Chemotherapy) and in Section three (that devoted to Serotherapy). With the advent of Sulfadiazine it is expected that in the Pneumonia season of 1941, Pneumonia as a cause of death in the United States will have been moved from fifth to sixth or seventh place.

Section four deals with the diagnosis of Tuberculosis by means of the Vollmer Tuberculin Patch Test, which is now used in 34 of the 48 states.

LILY-TULIP CUP CORPORATION

NEW YORK, N. Y. Nos. 306 AND 308

Health Defense through the medium of Lily-Tulip Cups for industrial workers, school children, public use in restaurants, taverns, road stands, bars, military establishments, etc.

How Lily-Tulip Cups lower the incidence of disease in mass feeding.

J. B. LIPPINCOTT COMPANY

PHILADELPHIA, PA. No. 404

New Lippincott books of interest to public health workers will be displayed. These include Tobias' "Essentials of Dermatology," Becker and Obermayer's "Modern Dermatology and Syphilology" and Eliason's "First Aid in Emergencies."

Other books of importance are Zabriskie's "Mother and Baby Care in Pictures," Ensworth and Greenwood's "Pneumonia and its Nursing Care," Habel and Milton's "The Graduate Nurse in the Home" and Hasenjaeger's "Asepsis in Communicable-Disease Nursing." Be sure to see them all.

MACGREGOR INSTRUMENT COMPANY

NEEDHAM, MASS. No. 104

The MacGregor Instrument Company will display a full line of VIM Products including VIM Needles made of Firth-Brearley Stainless Cutlery Steel and VIM Green Emerald Syringes, famous for their velvety action. Also featured will be VIM-ODEN Needles expressly designed for intradermal injections—a new advance in needles that assures invariably correct punctures. Special working models of VIM Syringes will demonstrate why these Slow-Ground Syringes do not leak or backfire.

THE MACMILLAN COMPANY

NEW YORK, N. Y. No. 323

Communicable Disease Control, by Gaylord Anderson and Margaret Arnstein, a new text written from both the health officer's and the public health nurse's point of view, will be featured at Macmillan Booth No. 323. Other new books on display of special interest will be *Clinical Nursing in Medicine*, by Jensen and Jensen, *Massage in Nursing Care*, 2d Ed., by Jensen-Nelson. *Child Psychology*, by Skinner and Harriman, *Feeding Our Old Fashioned Children*, by Aldrich and Aldrich, *Diet in Sinus Infections and Colds*, 2d Ed., by Ullmann, and *Edith Cavell*, by Helen Judson.

MAICO CO., INC.

MINNEAPOLIS, MINN. NOS. 500 AND 502

The manufacturers of the widely known MAICO audiometers, featuring the uniform Zero Reference Level and the Midget vacuum tube hearing aids are pleased to exhibit a new improved Color Tone Organ. This exhibit features a unique synchronization of color and sound and will enable visitors to measure their hearing acuity in both sound and color. Audiometers designed for public health work and other equipment will be available for inspection and demonstration.

THE MEDICAL BUREAU

CHICAGO, ILL. No. 210

In Booth No. 210, M. Burneice Larson offers the facilities of The Medical Bureau, an organization acting as counselor in problems of medical personnel to physicians, hospital administrators, clinic managers and executives in the medical field. The records of physicians who have specialized in the various branches of medicine or those who have completed their training recently as well as the records of hospital executives, graduate nurses, technicians, social workers and dietitians are available to those interested in the completion or reorganization of their staffs.

MERCK & CO., INC.

RAHWAY, N. J. NOS. 311 AND 313

THE PROGRESS OF CHEMOTHERAPY IN PUBLIC HEALTH WORK

Venereal diseases, pneumonia, and nutritional deficiencies are among the important problems confronting all concerned with public health work. During the thirty years since the introduction of the arsphenamines for the treatment of syphilis, chemotherapy has made great strides in aiding in the solution of these problems.

At the Merck booth, charts are on display and literature is available on Neoarsphenamine in Syphilis, Tryparsamide in Neurosyphilis, Sulfapyridine and Sulfathiazole in Pneumonia and Gonorrhea, and the Vitamins in Nutrition.

MINE SAFETY APPLIANCES COMPANY

PITTSBURGH, PA. No. 305

A wide variety of safety equipment will be on display in the M.S.A. booth. Some of the more important products will be: Gas-detecting and indicating instruments, such as, Carbon Monoxide Detector, Carbon Monoxide Indicator, Carbon Monoxide Alarm, Benzol Indicator, and Explosimeter; dust-counting and sampling apparatus consisting of Midget Impinger, Electrostatic Dust and Fume Sampler, and Dust-Counting Microscope; a complete line of respirators (for dusts, mists, paint, and metal fumes), Gas Masks, Breathing Apparatus, H-H Inhalator; and head protection, first aid kits and materials, including the new Foille Spray Kit, Ear Defenders, and Goggles. Both office and field representatives will be in attendance to demonstrate and discuss the equipment.

NATIONAL CANNERS ASSOCIATION

WASHINGTON, D. C. No. 408

The National Canners Association is the research and service organization of the canning industry. The exhibit background shows some of the scientific activities of the Association, and the educational publications of the Home Economics Division will be featured.

NATIONAL DAIRY COUNCIL

CHICAGO, ILL. No. 215

"A Guide to Good Eating" presents the basic pattern for adequate daily meals as recommended by nutrition authorities. This animated, lighted exhibit bears the Seal of Acceptance of the Council on Foods and Nutrition, American Medical Association.

A model of a physician points to the lighted, colored photographs of the foods in the pattern. The side panel emphasizes the theme of nutrition and national health; "Let us make America strong by making Americans stronger."

NATIONAL LIVE STOCK AND MEAT BOARD

CHICAGO, ILL. No. 208

The exhibit of the National Live Stock and Meat Board will portray Meat as a source of the essential food elements, protein, fats, carbohydrate, calcium, phosphorus, iron, copper and six vitamins with special emphasis on the factors of the vitamin B complex.

NATIONAL PEST CONTROL ASSOCIATION

BROOKYN, N. Y. No. 403

The National Pest Control Association comprising over 400 of the leading firms of the United States and foreign countries have nothing to sell except good will. Purpose of the exhibit is to present an educational display of household and structural pests, damages done and provide information which will be helpful to Public Health Officials. In attendance at the exhibit will be entomologists, chemists and commercial pest control operators (exterminators, fumigators, termite control operators) who will be prepared to answer questions.

NEW YORK MEDICAL EXCHANGE

NEW YORK, N. Y. No. 202

Patricia Edgerly (formerly connected with the United States Public Health Service) will act as medical employment consultant. There will be available for your perusal the biographies of qualified candidates who are interested in relocating, as well as those who are anxious to start their careers in the field of Public Health. A list of existing vacancies and opportunities will also be available. It is important that you consult her. No consultation or registration fee.

OVAL WOOD DISH CORPORATION

TUPPER LAKE, N. Y. No. 122

Exhibit of "RITESPOONS and RITEFORKS" Wooden single service spoons and forks for use in soda fountains, restaurants, roadside stands, etc., etc., in plain unwrapped, wrapped, dispenser packing. Also sanitary dispensing unit for above.

OREGON WASHINGTON CALIFORNIA PEAR BUREAU

HOOD RIVER, ORE. No. 209

An exhibit of fresh pears showing the varieties on the market in October, November and December and a supply of these to slice up and pass out as samples. Also photos of pear recipes—and a supply of recipe material and educational literature on the nutritional qualities of fresh pears, to pass out to those who visit our booth.

We will have available our colored slides showing recipes of pears in many attractive dishes. Our talking moving picture will also be available to show to interested groups.

PARKE, DAVIS & COMPANY

DETROIT, MICH. No. 100

This year Parke, Davis & Company is celebrating its Seventy-fifth Anniversary, and you will find featured in their striking exhibit certain of their outstanding contributions to medicine. Among these are antisyphilitic agents, such as Marphasen and various Bismuth Preparations; outstanding Biological Products, such as Despeciated Antitoxins, Meningococcus Antitoxin, Tetanus Toxoid, Tuberculin Purified Protein Derivative, Pertussis Vaccine Immunizing (Sauer); and several Adrenalin Chloride Preparations. You are cordially invited to visit this exhibit where you will find several Parke-Davis men who will be more than pleased to explain the meritorious features of these and other products.

PENNSYLVANIA SALT MANUFACTURING COMPANY

PHILADELPHIA, PA. No. 213

Will display Perchloron, B-K Powder, and B-K General Cleanser.

Perchloron is a supertest calcium hypochlorite containing not less than 70% available chlorine used for special and auxiliary purposes by water works and sewage plants, for bleaching, swimming pool disinfection, for bacteria control on food handling equipment. Now in dustless form. Packed in 5 lb. packages with handy Kork-N-Seal replaceable cover.

B-K Powder, a hypochlorite, principally used for bacteria control work in milk plants and milk producing farms. Packed in jars with full directions and convenient for lay use. Quick acting and highly soluble.

B-K General Cleanser—A free rinsing, efficient manual cleanser, particularly for use on milk utensils in hard water areas and also for glassware and dishes.

B-K Bottle Kompound, an alkali for machine washing of bottles, either soaker type or jet type hydro washers. An efficient alkali of a free rinsing type, produces bright sparkling bottles that are germicidally clean.

PET MILK SALES CORPORATION

ST. LOUIS, MO. NOS. 315, 317, 319, AND 321

An actual working model of a milk condensing plant in miniature with be exhibited by the Pet Milk Company in Booths 315, 317, 319 and 321. This exhibit offers an opportunity to obtain information about the production of Irradiated Pet Milk and its uses in infant feeding and general dietary practice. Miniature Pet Milk cans will be given to each physician who visits the Pet Milk Booth.

PETROLAGAR LABORATORIES, INC.

CHICAGO, ILL. No. 309

Petrolagar Laboratories, Inc., offer in addition to samples of the five types of Petrolagar, an interesting selection of descriptive literature and complete information on the treatment of constipation.

The S.M.A. Corporation in addition to The Bovinine Company will also be represented at Booth No. 309. Those interested in infant feeding will find new and useful facts pertaining to infants deprived of breast milk.

PHILIP MORRIS & CO. LTD., INC.

NEW YORK, N. Y. No. 422

Philip Morris & Company will demonstrate the method by which it was found that Philip Morris Cigarettes, in which diethylene glycol is used as the hygroscopic agent, are less irritating than other cigarettes. Their representative will be happy to discuss researches on this subject, and problems on the physiological effects of smoking.

PHOTOSTAT CORPORATION

ROCHESTER, N. Y. No. 523

The Photostat Corporation will show at this exhibition apparatus which is of particular interest to public health officials who have the responsibility of maintaining all kinds of health records. Photostat representatives will be on hand to discuss problems, and demonstrate methods, and to answer inquiries concerning the many uses of the Photostat. The Photostat is a simple, practical apparatus for quickly producing, by means of photography, copies of all kinds of documents, commercial papers, maps, charts and drawings—in fact anything drawn, written or printed.

POWERS X-RAY PRODUCTS, INC.

GLEN COVE, N. Y. No. 105

The Powers X-ray Products Exhibit will show photographs of the Powers Rapid X-ray Method for chest x-raying large groups of apparently well persons in operation. The use of paper film in rolls makes possible a speed of 125-150 x-rays per hour. High diagnostic quality, reliability, and economy are features of the Method. Also included will be a comparison study of paper and celluloid films, showing the adequacy of the paper film as a method of "screening out" those in need of medical care or further observation.

RALSTON PURINA COMPANY, INC.

ST. LOUIS, MO. No. 304

Ralston Purina Company, makers of Ralston Wheat Cereal, Ry-Krisp and Shredded Ralston, will display whole grain products. Descriptive literature emphasizing the importance of whole grains in optimal nutrition will be available.

A.P.H.A. members are invited to register for cereal samples, illustrated books giving nutritional information on whole wheat and whole rye, vitamin and mineral charts, and Allergy and Low Calorie diets. Special teaching material available to Public Health Nurses.

RECORDAK CORPORATION

NEW YORK, N. Y. No. 405

The Recordak exhibit consists of the Commercial Recordak, Model Ten Film Reader and Recordak Six Drawer Film File. The Commercial Recordak automatically records loose leaf documents such as record cards on 16mm Recordak Safety Film. The Film Reader enlarges 16mm microfilm records back to original size for reference, and can be used as an enlarger to make facsimile reproductions from the film records. The Recordak Film File retains 576 rolls of 16mm film under scientific conditions.

RUUD MANUFACTURING COMPANY

PITTSBURGH, PA. No. 211

Equipment for high-temperature dishwashing in restaurants will be featured at the exhibit of the Ruud Manufactu-ing Company, Booth 211. Types of Ruud Automatic Gas Water heaters providing hot water from 160 to 180 degrees will be on display, as well as exhibits demonstrating the bacteria-killing power of hot water at these temperatures.

The "Grease Spotter," a new type of illuminated magnifying glass for detecting grease on poorly-washed glasses will also be demonstrated.

W. B. SAUNDERS COMPANY

PHILADELPHIA, PA. No. 417

The W. B. Saunders Company welcome you to its exhibition at Booth No. 417 of its complete line of books on Medicine, Nursing and Health. Among these will be: Bauer and Hull's Health Education; Bolduan's Public Health and Hygiene (new edition); Boyd's Preventive Medicine; Geiger's Health Officer's Manual; Conrad and Meister's Teaching Procedures in Health Education; Bryan's Art of Public Health Nursing; Stoke's Clinical Syphilogy; Stoke's Dermatology and Syphilology; Pelouze's Gonorrhea; and advance material on Miss Grant's new book on Public Health Nursing.

SEALRIGHT CO., INC.

FULTON, N. Y. Nos. 113, 115, AND 117

SEALRIGHT BOOTH TO FEATURE NOVEL SERVICE IN CONJUNCTION WITH MILK BOTTLE HOOD EXHIBIT

Sealright Co., Inc., manufacturer of milk bottle closures and food containers is featuring this year an educational exhibit which explains the sanitary advantages of its new Hood cap for milk bottles.

As a special accommodation for Convention guests, Sealright is providing an information service in Booths 113, 115 and 117. A receptionist will be available at the Booth throughout the exhibition, who will be pleased to take and deliver messages for Association members. A Sealright page boy will be on duty for locating members on the floor who have registered at the Sealright Booth.

SEALTEST, INC.

NEW YORK, N. Y. Nos. 201 AND 203

The exhibit of the Sealtest System of Laboratory Protection will explain in dramatic form the work of this organization in dairy products research and in production control of ice cream, milk and other dairy products.

The activities of the Sealtest Laboratory Kitchen, Consumer Service division of the Sealtest System, in promoting the use of dairy products in the home will also be featured.

E. R. SQUIBB & SONS

NEW YORK, N. Y. Nos. 314 AND 316

Visitors attending the American Public Health Association Convention are cordially invited to visit the Squibb Exhibit in Booths 314 and 316. The complete line of Squibb Arsenicals, Biologicals, and Specialties of particular interest to workers in the Public Health field will be featured, together with a number of interesting new items. Well informed representatives will be on hand to welcome you and to furnish any information desired on the products displayed.

STANLEY SUPPLY COMPANY

NEW YORK, N. Y. No. 214

You are cordially invited to visit the "House of Stanley." This year in addition to exhibiting its well known line of Nurse's Leather Bags, the Stanley Supply Company is also featuring a new bag lining that is 16 ounces lighter than the lining in use at present. Many other new items of interest to nurses will also be displayed.

UNITED FRUIT COMPANY

NEW YORK, N. Y. No. 501

At the United Fruit Co. Booth No. 501, you will find an interesting display of the many dishes which can be made with bananas and which can fit into the planning of lower cost meals as well as into school lunch room and cafeteria programs.

Our popular Banana Milk Shake can also be sampled at our booth.

Come and see us! You are cordially invited.

WALLACE & TIERNAN CO., INC.

NEWARK, N. J. Nos. 400 AND 402

Wallace & Tiernan will have as the theme of their exhibit "The Best Home Defense is Health Defense. The Best Health Defense is a Sterilized Water." They will feature the W&T 7-point check-up as a guide to permanent protective measures and will show adaptations of standard chlorinators for emergency use as well as featuring several items of portable and mobile emergency chlorinating apparatus.

WESTINGHOUSE ELEC. & MFG. COMPANY

BLOOMFIELD, N. J. Nos. 101 AND 103

Featuring "STERILAMP Conditioning"—the application of STERILAMPS for the effective control of airborne and surface bacterial contamination. The generation, measurement and use of selected bands of ultraviolet radiation best suited for bactericidal applications in the field of Public Health will be described, illustrated and demonstrated. Sanitization equipment, STERILAMP fixtures

and ultraviolet measuring devices will be on display. Westinghouse invites members and visitors to Booths No. 101-103.

WESTINGHOUSE X-RAY COMPANY, INC.

LONG ISLAND CITY, N. Y. Nos. 412 AND 414.

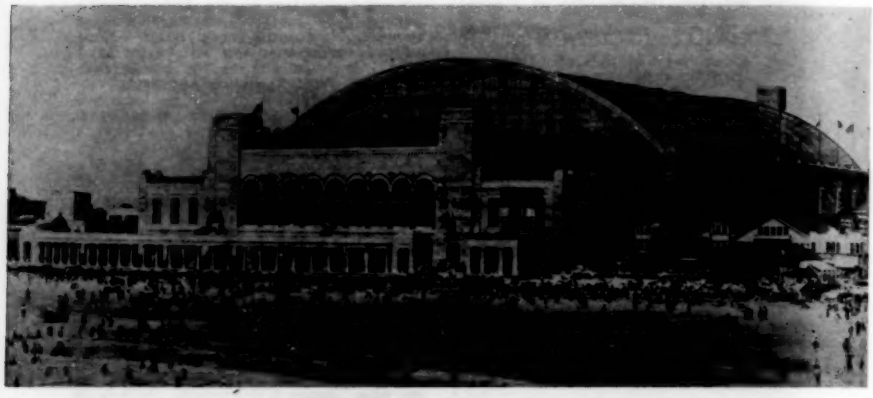
Westinghouse X-ray Booths 412 and 414 will have an interesting display of 35 mm chest films and photofluorographic equipment. The photofluorographic equipment is designed for economical and rapid differential chest radiography at low cost, in order to separate normal from suspicious cases, the latter recommended to be radiographed in the conventional manner on full size film.

WHITE LABORATORIES, INC.

NEWARK, N. J. No. 204

White Laboratories, Inc., will present in Booth No. 204 White's Cod Liver Oil Concentrate Liquid, Tablet and Capsule and White's Thiamin Chloride Tablet—all Council-Accepted.

Well-trained, courteous representatives will be in attendance to discuss the practical advantages provided by Cod Liver Oil Concentrate as an economical and convenient measure of Vitamin A and D prophylaxis and therapy. Pertinent information concerning our newer knowledge of the vitamins and vitamin deficiency states, together with literature descriptive of the clinical merit of the products of White Laboratories, will be offered for the registrant's consideration.



Convention Hall, Atlantic City, N. J.

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Positions Available

Public Health Engineer with the Department of Health of a city of 100,000 population in the Midwest. Give age, training, experience and references. Write **Box M,** A.P.H.A. Employment Service.

Southern State Department of Health seeks physicians qualified by training and experience as County Health Officers or as Pediatricians. Write **Box B,** A.P.H.A. Employment Service.

Western State Department of Health will consider applications from physicians with experience and a degree in public health. Write **Box S,** A.P.H.A. Employment Service.

Sanitary Chemist for sewage laboratory in Eastern city. Salary $2,000. Graduate preferred. Write **Box V,** A.P.H.A. Employment Service

Physician with public health training to serve as full-time county health officer in rural South Atlantic area. Salary $3,600 to $4,000. Write **Box C,** A.P.H.A. Employment Service.

County Public Health Nurses for New Mexico. Must have 4 months' postgraduate instruction under one of the recognized public health nursing courses and 1 year's experience. Must drive and have a car. Address inquiry to State Health Department, Santa Fe, New Mexico.

U. S. CIVIL SERVICE COMMISSION

The Commission has announced that applications will be received for positions as Senior Medical Officer ($4,600), Medical Officer ($3,800), and Associate Medical Officer ($3,200) for appointments in the Public Health Service, with the Food and Drug Administration, Veteran's Administration and the Indian Service. Forms for application may be obtained from the U. S. Civil Service Commission, Washington.

The Commission also announces that applications may be filed for the positions of Public Health Nurse ($2,000) and Graduate Nurse, general staff duty ($1,800) in the Indian Field Service, including Alaska.

A civil service examination for Public Health Nurse ($2,000 a year) has been open for some time. Nurses who have been unable to qualify for this examination because of the experience requirement now have an opportunity to qualify through a new Junior Public Health Nurse examination ($1,800 a year) which requires no experience. Applications are also being received for examinations now open for Junior Graduate Nurse ($1,620 a year) and Graduate Nurse for general staff duty ($1,800 a year). Forms may be obtained from the Civil Service Commission, Washington, D. C.

UNASSEMBLED EXAMINATIONS IN WEST VIRGINIA

The Merit System Council of West Virginia, Box 873, Morgantown, has announced that it is expected that unassembled examinations will shortly be given for the following positions in the West Virginia State Health Department.

Position	*Salary per month*
Chief of Medical Services	$325–$400
Opthalmologist	275– 350
Director of County Health Work	350– 400
Director, Maternal & Child Hygiene	350– 400
Director, Communicable Diseases	350– 400
Director, Vital Statistics	350– 400
Director, Industrial Hygiene	350– 400
Assistant Director, Maternal & Child Hygiene	320– 375
Assistant Director, Communicable Diseases (Venereal)	320– 375
Assistant Director, Tuberculosis	320– 375
Venereal Disease Consultant	320– 375
Senior Health Officer	320– 375
Junior Health Officer	280– 320
Health Officer Trainee	$200

Residence in West Virginia has been waived in consideration of the applications for these positions. However, residents of the state may be given preference in making appointments. Complete information may be obtained by writing to the Merit System Council.

POSITIONS WANTED

The Employment Service is in touch with specialists in several branches who wish teaching positions.

ADMINISTRATIVE

Physician with C.P.H. and special training in Venereal Disease Control wishes position in medical administration or in V.D. control work. Experienced as county health officer. **A485**

Physician with M.P.H. from Hopkins, experienced as county and district health officer, seeks responsible administrative position. **A458**

Physician with Dr.P.H. from Hopkins, special interests in mental hygiene and epidemiology, well experienced in teaching, will consider administrative, teaching, or investigating work. **A486**

Physician with M.P.H. from Hopkins 1924, experienced as state director for communicable diseases, as county health officer and as director of field training center, will consider responsible position with good income. **A483**

Physician, aged 44, graduate of Rush Medical, completing work at Johns Hopkins for M.P.H. and experienced as director of rural unit, will consider opening. **A480**

Physician, graduate of University of Iowa, candidate for Dr.P.H. at Harvard, seeks good administrative position. **A476**

Physician, aged 40, M.D. University of Minnesota, C.P.H. and Dr.P.H. Johns Hopkins, experienced in epidemiology and venereal disease control, will consider interesting position. **A482**

Physician, specialist in maternal and child health. M.D. University of Kansas, M.P.H. Harvard. Excellent background in pediatric residencies, experienced in municipal and county health work and as director of a state program, as pediatrician, or in school or college health program. **A479**

Dentist, University of Pittsburgh, D.D.S., M.P.H. University of Pennsylvania 1941, experienced in practice, wishes an administrative position in public health, preferably at state level. **M450**

HEALTH EDUCATION

Young woman with Master's degree in Health Education, Teacher's College, Columbia University, and background of clinical laboratory work and biochemistry, seeks position as health educator in research or as laboratory assistant in public health. **H494**

Health educator, man 32, M.S.P.H., with excellent training and varied experience in education and public health. Would expect salary of $3,000. Prefers National or State organization. Excellent references. **H405**

LABORATORY

Laboratory Director. Unusually well qualified and experienced man, aged 41, Ph.D. with training at Michigan, M.I.T. and Maryland, excellent references. Will consider administrative, teaching or research position in public health. **L459**

Experienced woman bacteriologist, now employed, graduate Iowa State College 1925, 6 months on Fellowship at Johns Hopkins 1930, wishes position in serology, bacteriology or research. **L458**

Experienced bacteriologist, young man of 33, Sc.B., who for several years has been in charge of state laboratory doing public health and diagnostic bacteriology, immunology and serology, will consider opening. **L427**

Experienced laboratory technician. Woman with 17 years in large midwest municipal laboratory. Has 12 year background in the Kahn test. Excellent references. Immediately available. Will consider any location. **L459**

SANITARY ENGINEERING

Engineer, aged 38, 3 years' experience as district sanitary supervisor, state department of health, together with work on plumbing, heating and ventilation, will consider position in the plumbing or heating field, or state department of health. Prefers middle western or western states. **E453**

Public Health Engineer, M.S. Harvard, experienced in public health and industrial hygiene, wishes position of better sort in public health engineering or industrial hygiene. **E470**

Public Health Engineer, M.S. Harvard, with more than 10 years' experience including 5 years with state division of sanitation, is available. **A468**

STATISTICAL

Public Health Statistician. Young man M.S.P.H. Michigan, now employed as supervisor of state health project, experienced in medical economic research, epidemiology studies and vital statistics, seeks position in city or state health department in midwest. **S458**

Advertisement

Opportunities Available

PUBLIC HEALTH PHYSICIANS—(a) Young physician with background in public health and some experience industrial medicine for interesting executive appointment with national organization; considerable traveling; $4,200–$4,500. (b) Physician for maternal and child health work in municipal health department; midwest; $4,300. (c) Pediatrician for appointment with state department of health; responsibility will include 13 counties in southern state; woman physician eligible. (d) Physician to conduct generalized public health program; $3,500–$4,000; East. (e) Physician for interesting appointment with municipal department of health in tropics; facilities for research available. (f) County health physicians; several needed by state department of health in South; southerners under 40 preferred; women eligible. (g) Several young physicians trained in public health for rural health service; Southwest. (h) For staff appointment; city health department; Ohio. (i) Young physician with California license able to conduct well baby conferences, do fluoroscopy in tuberculosis survey clinics, some communicable disease work; may consider woman physician; $3,300, plus mileage. (j) Assistant city health officer interested also in assuming duties of school physician; special training in public health not required; $275, rapid advancement; city of 80,000; South. (k) School physician; large industrial center; man with public health degree or training preferred; Midwest. PH8-1, Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago.

STUDENT HEALTH PHYSICIANS—(a) Physician qualified to organize and head department of student health in large eastern college for men; Protestant preferred, since school is denominational. (b) For appointment on student health staff; state university; opportunity to engage in clinical research; central state. PH8-2, Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago.

PUBLIC HEALTH NURSES—(a) Educational director for large community health organization; college and public health nursing degrees required; about $175. (b) City-county nurse; $135, mileage allowance; West. (c) Three school nurses, fully qualified in public health; vacancies are in elementary and junior high schools of large midwestern industrial city; excellent salary; security; desirable working conditions. (d) Out-patient nurse; ability to reorganize department essential; fully approved children's hospital. PH8-3, Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago.

BACTERIOLOGISTS—(a) Senior and junior bacteriologists for municipal health department; degree, experience in public health laboratory procedures important; $1,200–$2,000. (b) Assistant bacteriologist; department of health; Chicago area; $125. PH8-4, Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago.

Situations Wanted

PUBLIC HEALTH PHYSICIAN—B.S., M.D. degrees, state university; M.S.P.H., University of Michigan; several years' successful general practice, including part-time health appointment; 4 years' administrative experience with state department of health; for further information write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—B.S. degree in Public Health Nursing, Columbia; graduate of one of country's outstanding hospitals; experience includes several years as infant welfare nurse, 6 years as educational supervisor in out-patient department of large teaching hospital; past several years, instructor of public health nursing, large teaching hospital; for further information write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—Fairly recent graduate of midwestern training school; certified public health nurse; will receive special teacher's certificate upon completion courses in university medical school; for further information, write Burneice Larson, Director, Palmolive Building, Chicago.

BACTERIOLOGIST—A.B., Ph.D., state university; 6 years, university laboratory of animal pathology; 4 years, parasitologist, state department of public health; for further information, write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

NEWS FROM THE FIELD

National Conference on Nutrition

A NATIONAL Nutrition Conference called by Honorable Paul V. McNutt, Administrator of the Federal Security Agency, at the direction of President Roosevelt was held late in May in Washington. More than 500 especially invited persons participated, representing many related specialties and the public.

At the conclusion of the 3 day session, the National Nutrition Program for America was adopted in order to raise the nutritional standards of the American people to the highest possible levels. It was expected that the administration of the program would be placed in the hands of a body of experts representing science, industry, and government, to be created by executive order and incorporated in the office of the Coördinator of Health, Welfare and Related Defense Activities of the Federal Security Agency. The conference report, entitled "Recommendations of

Chart of Recommended Daily Allowances for Specific Nutrients [1]

Committee on Foods and Nutrition, National Research Council

	Calories	Protein	Calcium	Iron	A [3]	Thiamin (B^1) [2]	Ascorbic Acid (C) [2]	Riboflavin	Nicotinic Acid	D
		gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.	I.U.
Man (70 kg.)										
Moderately active	3,000	70	0.8	12	5,000	1.8	75	2.7	18	
Very active	4,500					2.3		3.3	23	[5]
Sedentary	2,500					1.5		2.2	15	
Woman (56 kg.)										
Moderately active	2,500	60	0.8	12	5,000	1.5	70	2.2	15	
Very active	3,000					1.8		2.7	18	[5]
Sedentary	2,100					1.2		1.8	12	
Pregnancy (latter half)	2,500	85	1.5	15	6,000	1.8	100	2.5	18	400–800
Lactation	3,000	100	2.0		8,000	2.3	150	3.0	23	400–800
Children up to 12 years										
Under 1 year [4]	100 per kg.	3-4 per kg.	1.0	6	1,500	0.4	30	0.6	4	400–800
1–3 years	1,200	40	1.0	7	2,000	0.6	35	0.9	6	
4–6 years [6]	1,600	50	1.0	8	2,500	0.8	50	1.2	8	
7–9 years	2,000	60	1.0	10	3,500	1.0	60	1.5	10	[5]
10–12 years	2,500	70	1.2	12	4,500	1.2	75	1.8	12	
Children over 12 years										
Girls—13–15 years	2,800	80	1.3	15	5,000	1.4	80	2.0	14	
16–20 years	2,400	75	1.0	15	5,000	1.2	80	1.8	12	[5]
Boys—13–15 years	3,200	85	1.4	15	5,000	1.6	90	2.4	16	
16–20 years	3,800	100	1.4	15	6,000	2.0	100	3.0	20	[5]

[1] These are tentative allowances toward which to aim in planning practical dietaries. These allowances can be met by a good diet of natural foods; this will also provide other minerals and vitamins, the requirements for which are less well known.

[2] 1 mg. thiamin equals 333 International Units; 1 mg. ascorbic acid equals 20 International Units (1 International Unit equals 1 U.S.P. unit).

[3] Requirements may be less than these amounts if provided as vitamin A, greater if chiefly as the provitamin carotene.

[4] Needs of infants increase from month to month. The amounts given are for approximately 6–18 months. The amounts of protein and calcium needed are less if from breast milk.

[5] Vitamin D is undoubtedly necessary for older children and adults. When not available from sunshine, it should be provided probably up to the minimal amounts recommended for infants.

[6] Allowances are based on the middle age for each group (as 2–5, 8 etc.), and for moderate activity.

the National Nutrition Conference for Defense to the President of the United States" asserted that it was as vital for the United States to make immediate use of its knowledge of nutrition in the present national emergency as to take indicated steps of military preparedness.

The report of the conference urged the use of the recommended allowances of calories, protein, and certain important minerals and vitamins as prepared by the Committee on Food and Nutrition of the National Research Council (see attached table).

The report encouraged more widespread education of doctors, dentists, social service workers, teachers, and other professional workers in the newer knowledge of nutrition and a mobilization of every educational method to spread the newer knowledge among laymen by means of schools, motion pictures, the radio, the public press, home and community demonstrations.

There should be mobilization of all neighborhood, community, state and national organizations and services. There should be vigorous and continued attack upon the fundamental problems of unemployment, insecure employment, and the attainment of rates of pay adequate to maintain an American standard of living. There should be encouragement in all practical ways of greater production by agriculture of the foods needed in more abundance. The report urged the enrichment of certain staple food products such as flour and bread with nutritive elements that have been removed by modern milling and refining processes.

"No nation, certainly no great nation, has every truly conquered hunger, the oldest enemy of man. Such an aim is not too high, such a goal is not too difficult for the people of the United States. It is in line with our tradition of pioneering on new frontiers. It is a particularly fitting task for us at this day when Democracy should point the way to a new and better civilization for oppressed peoples all over the earth."

PUBLIC HEALTH RESEARCH INSTITUTE OF NEW YORK CITY, INCORPORATED

DR. John L. Rice, Commissioner of Health of New York City, announced on June 29 that an appropriation of $100,000 had been included in the 1941–1942 budget of the Health Department to be used for scientific research essential to the protection and the improvement of health, safety, and welfare of the people of New York City. Authority had been granted for the city to enter into a contract with the Public Health Research Institute, Inc., which is a scientific, non-profit organization, devoted "to obtaining for the city the best available biological products and advanced skills and procedures for combating disease and epidemics which occur or may occur."

The Board of Directors of the Research Council includes David M. Heyman, a member of the New York City Board of Health, President; David Rockefeller, Vice-President; David Morse, Secretary; and Edwin P. Chinlund, Treasurer. Ex-officio members of the Board include the Mayor of New York City, the Comptroller and the Health Commissioner.

A Research Council has been set up headed by Thomas M. Rivers, M.D., Director of the Hospital of the Rockefeller Institute for Medical Research, as Chairman. Other members include Eugene L. Opie, M.D., Henry C. Sherman, Ph.D., Michael Heidelberger, Ph. D., George Baehr, M.D., and Ralph S. Muckenfuss, M.D. Neither members of the Board of Directors nor of the Research Council will receive salary, the province of the former being to assure sound business management and of the latter to retain the necessary scientific personnel. The Institute will be housed in the Health Department's Bureau of Laboratories located in the William

Hallock Park Laboratory at the foot of East 15th Street, Manhattan.

Dr. Rice pointed out that, while a limited amount of research work has been carried forward in the Health Department's Bureau of Laboratories, through a corporate structure known as Health Research Fund, Inc., the staff has been inadequate and funds which for the most part had come from voluntary sources, were insufficient to carry forward scientific research necessary for a city of 7,500,000. The Research Institute has absorbed the corporate structure of Health Research Fund, Inc., and, by terms of the contractual agreement with the city, it may continue to receive and accept grants, gifts, bequests and contributions from private or foundation sources with the consent of the Commissioner of Health. All scientific results which accrue from the Research Institute will become the property of the City of New York.

REPRINTS AVAILABLE

THE following reprint is available to JOURNAL readers without charge on request of the author:

"Some Notes Concerning Human Intestinal Parasites and Social Welfare in the United States," by William Hugh Headlee, M.S., Ph.D. Parasitology Laboratory, Department of Biology, Purdue University, Lafayette, Ind.

HEALTH HAZARD ELIMINATED IN HAT INDUSTRY

ON May 19 the nation's hat industry agreed to eliminate poisonous mercurial compounds from the manufacture of fur felt after December 1, 1941. The agreement, which was reached during conference with Surgeon General Thomas Parran of the Public Health Service, is expected to remove one of the oldest and most dangerous health hazards to workers.

Participating in the agreement were representatives of the industry—The Hatters' Fur Cutters Association and the Hat Institute, Inc., of New York. Workers were represented by officials of the United Hatters, Cap and Millinery Workers International Union. Health and labor commissioners of New York, Pennsylvania, New Jersey, Massachusetts and Connecticut, states in which the nation's felt hat industry is concentrated, also took part in the Conference.

Adoption of the regulations is expected to afford protection for the 22,000 workers employed in the American fur felt and hat industry.

PHILIPPINE ISLANDS

THE Philippine legislature has approved the creation of a Department of Health and Public Welfare to take the place of the former administration as a division of the Department of Public Instruction. Dr. Jose Fabella, Manila, who has been Commissioner of Health and Welfare under the former arrangement, has been appointed Secretary of Health, and Dr. Hilario Lara, Manila, is Undersecretary.

POSTGRADUATE COURSES IN ADVANCED CLINICAL NURSING AT WESTERN RESERVE

THE School of Nursing of Western Reserve University, Cleveland, Ohio, in affiliation with the City Hospital of Cleveland and the Anti-Tuberculosis League of Cleveland, offers in September a program for graduate nurses in tuberculosis, including lectures, clinics, demonstrations and conferences related to the disease and the broad aspects of tuberculosis as a major community health problem.

The School of Nursing also offers an advanced clinical program in obstetric nursing of one semester's duration and a 6 months' graduate program in orthopedic nursing, primarily for public health nurses and supervisors of orthopedic nursing services. Information may be obtained from the School of Nursing at 2063 Adelbert Road, Cleveland.

DR. BAEHR APPOINTED MEDICAL DIRECTOR, OFFICE OF CIVILIAN DEFENSE

DR. GEORGE BAEHR of New York has been appointed Chief Medical Director of the Office of Civilian Defense and of the Public Health Service, according to an announcement by Mayor Fiorello H. LaGuardia, Director of the Office of Civilian Defense. Dr. Baehr will coordinate the activities of that office and the Public Health Service. He will have headquarters in the Public Health Service Building and will be assisted by an advisory medical board.

The Office for Civilian Defense is concerned with the development of plans and facilities for disaster relief in the cities, beginning with the cities along both seacoasts.

NATIONAL ORGANIZATION FOR PUBLIC HEALTH NURSING

THE N.O.P.H.N. is pleased to announce that the National Foundation for Infantile Paralysis has renewed the grant to the N.O.P.H.N. to provide for seven scholarships to assist nurses to prepare themselves for orthopedic nursing.

Further details and application blanks may be obtained by writing to Jessie L. Stevenson, Secretary, Committee on Orthopedic Scholarships, National Organization for Public Health Nursing, 1790 Broadway, New York, N. Y.

AMENDMENT TO SOCIAL SECURITY ACT

THE Washington News Letter on Social Legislation reports that considerable support is developing in Washington for an amendment to the Social Security Act which would authorize reimbursement to states for expenditures for medical care. The plan would permit direct payment by states to doctors and hospitals. An amendment was drafted two years ago to accomplish this purpose but, after some study by federal officials, this plan was dropped lest it jeopardize more comprehensive health plans which were then pending. With the growing recognition that medical care is an essential feature of adequate public assistance, there is increasing interest in this proposal.

DR. JAMES FREDERICK ROGERS RETIRES

THE retirement of Dr. James Frederick Rogers, Consultant in Hygiene of the U. S. Office of Education, was announced effective May 31. Entering the government service first in 1920 in the office of Industrial Hygiene, U. S. Public Health Service, Dr. Rogers in 1923 joined the staff of the Office of Education. He received his M.D. at Yale in 1905, his C.P.H. in 1919, and Dr.P.H. in 1920.

An authority in the field of school health, Dr. Rogers has been the author of many government publications dealing with the health, physical education, safety, and welfare of Americal school children and teachers. One of the best sellers of his many Office of Education bulletins has been "What Every Teacher Should Know About the Physical Condition of Her Pupils" of which more than 125,000 copies are said to have been sold.

A reception for Dr. Rogers attended by his coworkers was held on May 28 in the library of the Office of Education.

CIVILIAN DEFENSE MEDICAL BOARD

MAYOR Fiorello H. LaGuardia of New York City, head of the Office of Civilian Defense, has named a four man civilian defense medical board to include the planning of emergency field stations in which injured persons would receive emergency treatment before being evacuated to base hospitals. Members of the Board include Albert McCown, M.D., of Washington, Assistant Medical Director of the American Red

Cross; Elliot C. Cutler, M.D., Professor of Surgery at Harvard University, Boston; George Baehr, M.D., New York, N. Y.; and Oliver Kiel, M.P., President of the Texas State Board of Medical Examiners.

ARMY VACANCIES FOR DIETITIANS

APPROXIMATELY 350 vacancies for dietitians now exist in army hospitals, which now have 103 dietitians on duty, according to the *J.A.M.A.* A school for dietitians is conducted at the Army Medical Center in Washington, D. C. The requirements for entrance include graduation from a recognized college with a major course in dietetics and nutrition. The pay of dietitians is $1,800 a year. In time of peace only women certified by the Civil Service Commission are eligible. In time of war, however, men qualified as dietitians will be enlisted as technical sergeants as far as vacancies exist.

SOCIEDAD MEXICANA DE PEDIATRIÁ

THE following are the new officers of the Sociedad Mexicana de Pediatriá, Mexico, D. F. Mexico.

President—Dr. Fernando Lopez Clares
Vice-President—Dr. Demófilo González
Treasurer—Dr. Ernesto González Tejeda
Secretary—Dr. J. G. Pagola

COURSE IN INDUSTRIAL HEALTH

THE University of Chicago, through the Department of Nursing Education, is offering a course in industrial health to public health nurses for the autumn and winter quarters, 1941–1942. It will include a study of the origin and development of industrial health programs and present-day objectives, organization, and activities. Special emphasis will be given to the rôle of the nurse.

Experts in the field of industrial health will participate in the course.

NATIONAL RECREATION CONGRESS

AMONG the topics for discussion at the twenty-sixth National Recreation Congress, in Baltimore, Md., from September 29 to October 3 on the subject, "The America We Defend," will be: Long-Range Planning for Recreation—The Baltimore Example; Recreation in Rural Communities; Modern Industry and the Recreation Needs of the Employees; Recreation for Girls and Women; Planning, and Use of School Buildings for Community Recreation; The Rôle of the Church in Recreation; Methods of Increasing Recreation Opportunities for Colored Groups; Joint Planning of Public and Private Agencies in Meeting Recreation Needs.

PERSONALS

Central States

ROBERT M. FERGUSON, M.D., Indianapolis, Ind., has been named Director of Health District No. 4, with headquarters in Rising Sun. He succeeds DR. GEORGE M. BROTHER,† who is now Chief of the Bureau of Local Health Administration, Indianapolis. District No. 4 includes the Counties of Dearborn, Ripley, Jefferson, Switzerland, and Ohio.

GLENN V. HOUGH, M.D., formerly of Milwaukee, Wis., has been appointed Health Officer of the fourth Public Health District with headquarters at Sparta.

EDWIN H. JORRIS, M.D.,† has been appointed Director of Local Health Services for the Wisconsin State Board of Health.

WALLACE S. PETTY, M.D.,* Sioux City, Iowa, has resigned as Health Officer of Woodbury County. He has been succeeded by DR. JOHN A. COWAN,

* Fellow A.P.H.A.
† Member A.P.H.A.

who has been Acting Director of Public Health for Sioux City and Woodbury County.

CECIL A. Z. SHARP, M.D.,† has resigned as superintendent of the Macomb Health District to enter private practice in Trenton, Ill.

CHESTER A. SPITLER, M.D., Middletown, Ohio, has been named Health Commissioner of the town to succeed the late DR. GEORGE D. LUMMIS.

ARTHUR R. ZINTEK, M.D., of Durand, Wis., has been appointed Health Officer of the first District with headquarters in Madison, to succeed the late DR. GUY W. HENIKA.

Eastern States

ROBERT R. BALMER, JR.,† Senior Sanitary Engineering Aide with the Massachusetts Department of Public Health at Westfield, Mass., has resigned to accept a position in the U. S. Public Health Service in Washington.

FRANCIS B. CARROLL, M.D.,† State District Health Officer, Massachusetts Department of Public Health, has been called for military service. He has been detailed to Camp Devens, Mass.

MILLARD C. HANSON, M.D.,* of Pittsburgh, Pa., was appointed Commissioner of Health of Richmond, Va., as announced on June 14 by JESSE M. JOHNSON, Director of the Department of Public Welfare. Dr. Hanson, who is now the Director of the Pittsburgh Syphilis Control Program, was formerly Health Officer of Toledo. He will take up his duties on August 1.

ARTHUR P. LONG, M.D.,† Assistant Director of the Division of Biologic Laboratories, Massachusetts Department of Public Health, has been called for military service, and has been assigned to the office of the Surgeon General in Washington.

ALBERT MCCOWN, M.D., of New York City, recently on the staff of the New York City Department of Health, has become associated with the National Headquarters of the American Red Cross on June 1, as Assistant Medical Director.

WILLYS N. MONROE, M.D.,† Health Commissioner of Pittsfield, Mass., has been called into active service at Camp Edwards, Mass. His place will be taken temporarily by DR. HARRY B. FRANCHERE,† of Altamont, N. Y., recently with the Summit County, Ohio, Health Department.

FRED L. MOORE, M.D., C.P.H.,* of Brooklyn, N. Y., has been appointed Professor and Executive Officer of the Department of Preventive Medicine and Community Health, at Long Island College of Medicine, Brooklyn, N. Y. Dr. Moore succeeds DR. A. E. SHIPLEY,* who retired on July 1.

HENRY FIELD SMYTH, M.D.,* Assistant Professor of Industrial Hygiene, University of Pennsylvania School of Medicine, is retiring at the end of the present academic year.

ALEX J. STEIGMAN, M.D., of the Harvard Medical School staff, has left for England to take up his work as pediatrician with the American Red Cross—Harvard University Hospital for Infectious Diseases.

The University of Pennsylvania conferred the degree of Doctor of Science at its recent Commencement on DR. JOHN J. SHAW,† recent Secretary of Health for Pennsylvania, and on DR. RICHARD WILSON of Havana, Cuba, in recognition of public health work.

CHARLES F. WILINSKY, M.D.,* Director of Beth Israel Hospital and Deputy Commissioner of Health, Boston City Department of Health, of Boston, was awarded the honorary degree of Master of Arts by Harvard

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* Fellow A.P.H.A.
† Member A.P.H.A.

University at the 305th Commencement on June 19.

ALEXANDER WITKOW, M.D., M.P.H.,† of New York, on the completion of his course in Public Health at Yale University, has been appointed Director of the Dickinson County Health Department in Iron Mountain, Mich.

Southern States

LEE A. DARE, M.D., formerly of Lawrenceburg, Ky., has resigned as Health Officer of Anderson County.

LEROY L. FATHERREE, M.D.,† has been chosen Health Officer of Little Rock, Ark.

L. L. FRIEDMAN has been appointed Sanitary Supervisor and Rodent Control Director of Richmond, Va.

JUSTINA H. HILL, M.D., Bacteriologist at Johns Hopkins University, was granted the Doctor of Science degree on June 16 by Smith College, Northampton, Mass.

WILL H. LASSITER, JR., M.D., of Selma, N. C., has been appointed Health Officer of Johnston County to succeed DR. JAMES H. BUNN, JR., Smithfield, who resigned to enter military service.

PAUL R. MACFAYDEN, JR., M.D.,† Concord, N. C., recently Acting Health Officer of Cabarrus County, has been appointed in Richmond County to succeed DR. TIDAL BOYCE HENRY, Rockingham.

E. G. MCGAVRAN, M.D., M.P.H.,† Director of the Monongalia County Health Department, Morgantown, W. Va., and Director of the West Virginia Public Health Training Center, has resigned effective August 1, to accept the position of Health Officer of St. Louis County, Mo., where he succeeds DR. T. R. MEYER, who has entered military service.

PAUL D. MOORE, M.D.,† of Calhoun, Ky., has resigned as Health Officer of McLean County.

FRAY OWEN PEARSON, M.D., C.P.H., formerly Director of the Hamilton County Health Department in Tennessee, was appointed Director of a new health unit which is a consolidation of the Hamilton County-Chattanooga Health Department, effective July 1. DR. W. C. WILLIAMS,* Commissioner of Public Health of Tennessee, has announced that this is the first city-county unit in the state.

EMIL A. STEINER, M.D.,† Somerset, Ky., has resigned as Health Officer of Pulaski County.

STARLING D. STEINER, M.D.,† of Wellsburg, W. Va., Health Officer of Brooke County, has been appointed Director of county health work in the State Health Department, to succeed DR. BRUCE H. POLLOCK,* Charleston, who recently reported for duty with the U. S. Navy.

HARRY F. WILSON, M.D.,* Director, Medical Hygiene Division of the State Board of Health, Columbia, S. C., Major, Army Medical Reserve Corps, has been ordered to extended active duty for a period of a year. Major Wilson will be assigned to Fort Meade, Md.

R. MANTON WILSON, M.D., has been appointed Medical Inspector and City Epidemiologist of Richmond, Va.

Western States

FRANK G. CRANDALL, M.D.,* has been appointed Epidemiologist of the City Health Department, Los Angeles, Calif. He succeeds DR. CARL J. HAWLEY, who has been called to active duty in the Army.

HUGH DIERKER, M.D., M.P.H.,† has been appointed District Health Officer of the Compton District in Los Angeles County, Calif., following a Civil Service examination. The territory includes Compton, Lynwood,

* Fellow A.P.H.A.
† Member A.P.H.A.

Downey, Bellflower, Signal Hill, Catalina Island and surrounding territory, with a population of about 100,000.

J. C. GEIGER, M.D.,* Health Officer of the City and County of San Francisco, Calif., was awarded the decoration of the White Cravat with Red and Blue Borders of the Illustrious Order of the Jade, by Generalissimo Chiang Kai-shek of China, "For work of merit in public health in the Republic of China and among the Chinese population in San Francisco."

CARL E. GREEN,* State Sanitary Engineer, Oregon State Board of Health, has resigned to enter consulting engineering practice. He is to be succeeded by CURTISS M. EVERTS, JR.

GEORGE F. MANNING, M.D.,† of Flagstaff, Ariz., has been appointed State Superintendent of Public Health in Arizona by a recently created Board of Public Health.

DEATHS

B. BARRETT, M.D., of Boston, Assistant Director of the Division of Communicable Diseases, Massachusetts Department of Public Health, died May 31.

GEORGE O. ADAMS,† Chief Chemist at the Lawrence Experiment Station of the Massachusetts Department of Public Health since 1934, died June 22.

BRUCE MAYNE, Dr.P.H., identified with the U. S. Public Health Service in various capacities since 1908, died in the U. S. Marine Hospital, Baltimore, April 30, following an extended illness.

JOHN J. SHAW, M.D.,† State Secretary of Health for Pennsylvania, died suddenly in Harrisburg on June 24 of a heart attack, at the age of 53 years. Appointed to his post in January, 1939, Dr. Shaw's influence on public health was recognized in 1940, when he received from the Philadelphia County Medical Society its Strittmatter Medal, and with the receipt of honorary degrees from the University of Pennsylvania and from Temple University, Philadelphia, in 1941.

* Fellow A.P.H.A.
† Member A.P.H.A.

CONFERENCES AND DATES

American Association of Public Health Dentists. Annual Meeting. Lamar Hotel, Houston, Tex. October 26–28.

American College of Surgeons. Hotel Statler, Boston, Mass. November 3–7.

American Congress of Physical Therapy—20th Annual Scientific and Clinical Session. The Mayflower Hotel, Washington, D. C. September 1–5.

American Dietetic Association—24th Annual Convention. Hotel Jefferson, St. Louis, Mo. October 20–23.

American Hospital Association. Atlantic City, N. J. September 15–19.

American Library Association—Midwinter Conference. Chicago, Ill. December 28–31.

American Public Health Association—70th Annual Meeting. Convention Hall, Atlantic City, N. J. October 14–17.

American Water Works Association—
Western Pennsylvania Section—Lawrence Hotel, Erie, Pa. August 7–9.
New York Section—Hotel Queensbury, Glens Falls, N. Y. September 11–12.
Rocky Mountain Section—Lafonda Hotel, Santa Fe, N. M. September 18–19.
Michigan Section—Hotel Pantlind, Grand Rapids, Mich. September 24–26.
Minnesota Section—Nicollet Hotel, Minneapolis, Minn. October 9–11.
Southwest Section—Fort Worth, Tex. October 13–16.
New Jersey Section—Atlantic City, N. J. October 16–18.
Missouri Valley Section—Montrose Hotel, Cedar Rapids, Iowa. October 20–22.
California Section—Fresno Hotel, Fresno, Calif. October 22–25.
Kentucky-Tennessee Section—Hotel Andrew Jackson, Nashville, Tenn. October 27–29.
North Carolina Section—Sheraton Hotel, High Point, N. C. November 3–5.
Four States Section—Baltimore, Md. November 6–7.

Child Study Association of America. Hotel Commodore, New York, N. Y. November 14–15.

Dairy Industries Exposition. Concurrent with annual convention of the International Association of Milk Dealers, and the International Association of Ice Cream Manufacturers. Automotive Building, Canadian National Exhibition. October 20–25.

Federation of Sewage Works Association. New York, N. Y. October 9–11.

Florida Public Health Association. Orlando, Fla. December, 1941.

Idaho Public Health Association. Lewiston, Ida. October 6–7.

International Association of Milk Sanitarians, Inc.—Annual Meeting. Mayo Hotel, Tulsa, Okla. October 27–29.

Michigan Public Health Association. Grand Rapids, Mich. November 12–14.

National Safety Council. Chicago, Ill. October 6–10.

National Society for the Prevention of Blindness. New York, N. Y. December 4–6.

New Mexico Public Health Association. Gallup, N. M. October 30–November 1.

New York State Association of Dairy and Milk Inspectors. Annual Meeting. Hotel Statler, Buffalo, N. Y. September 24–26.

Pennsylvania Sewage Works Association. State College, Pa. September 3–5.

Foreign

International College of Surgeons. Mexico City, Mexico. August 10–13.

Pan American Medical Association—8th Congress. Buenos Aires, Argentina. 1941.

Second Inter-American Congress of Municipalities. Santiago, Chile. September 15–21.

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